ELECTRICAL REVIEW

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27th February, 1948

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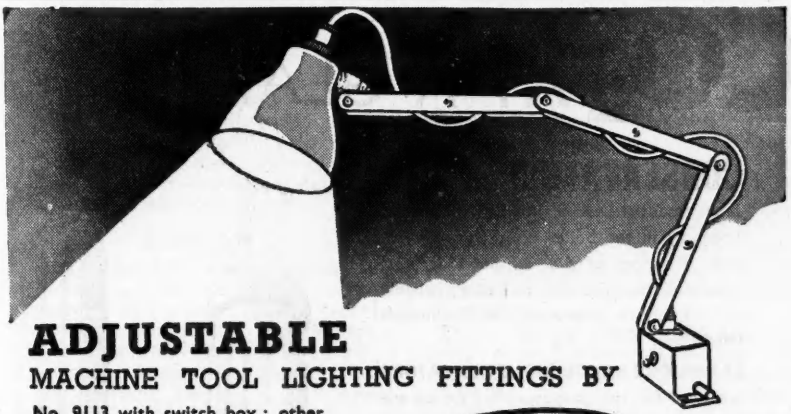

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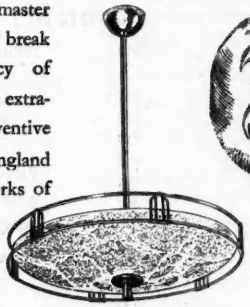

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER — ESTABLISHED 1872

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Peak Control

Possibilities of the Ripple System

SINCE warmth, in conjunction with moisture, is the primary condition of life itself, and the chief function of food is to provide bodily heat, it seems illogical to increase charges for space heating and to restrict its use while "pegging" food prices.

So long as low-grade coal is available, its transformation into electricity for long-hour service has been shown here on previous occasions to be fully justified. The economic case for allocating expensive plant capacity, i.e., kW as distinct from kWh, to supplying electric heaters for occasional use only is less obvious. We refer here to those of the luminous kind (not, by the way, the only form available) which, owing to a poor diversity factor, related to weather conditions, exaggerate load peaks during "cold snaps."

Plant Costs

From the economic angle the position is, however, more favourable than is often supposed. Peaks are normally met by older plant which originally cost perhaps a third of present-day figures. Much of it, too, is approaching or has already passed its book-keeping life and so the capital expenditure on it has largely been written off. Further, the cut in the generating plant programme appears to indicate that time-expired plant will have to be relied on to take peaks for some years ahead. In that case, the negligible value of the capital charges to be covered by peak hour usage will much more than compensate for the comparatively high fuel consumption of the old plant.

The economic aspect, however, is not the only one in view of the probably prolonged deficiency of kW capacity. Something more positive will be needed than exhortations to consumers to deprive themselves of warmth for several hours a day for an indefinite number of years. The position would be vastly improved if supply authorities could cut off, but only as emergencies arise, such demands as they were not able to meet.

A Timely Paper

A promising means of meeting this condition is furnished by ripple control (audio frequency) on the parallel-injection system. Expectation among electrical manufacturers of its widespread use is indicated by the formation last year of the Ripple Control Technical Committee. Among items receiving the attention of this Committee is the avoidance of "spill-over" signals that may possibly be the cause of mutual interference as between different networks.

In the timely paper which they presented to the Transmission Section of the Institution of Electrical Engineers (reported in our issue of 13th February), Messrs. T. W. Ross and R. M. A. Smith gave good reasons for their view that the technical obstacles are by no means insuperable and showed that an economic case for ripple control could be substantiated.

Although the control of large electric space-heating apparatus should present little difficulty, similar discrimination cannot be made in the majority of residences,

where the heating load is not readily dissociated from the rest of the installation. On the other hand water heaters, especially those embodying thermal storage, could be cut off in emergency through ripple control without causing undue hardship. Where other methods exist they should be extended locally as part of accepted schemes for saving the peak. In the large number of instances where uncontrolled diversity factor is not enough to do so, ripple control appears to us to possess considerable merits for reasonably expeditious installation on a comprehensive scale.

Reports from overseas, e.g., Canada, are that the system works without trouble with markedly beneficial effect on the domestic load factor. A corollary is that the greater the number of electric water heaters in use, the greater the potentiality for controlling the peaks.

China's Needs

THERE can be no doubt that a vast market exists in China for all classes of goods, including electrical equipment, but it is clear from the report of the Trade Mission to China reviewed on page 312 that financial difficulties stand in the way of trade with that distressed country. As with ourselves, China's only hope is to produce more and so become able to import what it needs. But production depends in the first place, on the existence of productive plant which must come from abroad. Possible solutions are the investment of money by foreign firms, although conditions do not encourage this, or the obtaining of loans from abroad. Assistance under the Marshall Plan has recently been voted by the United States Congress. The report stresses the value of Hong Kong to British trade but the situation there has deteriorated lately.

E.D.A. after Vesting Day

WHEN the electricity supply vesting day (1st April) arrives the British Electrical Development Association, under its present constitution, will lose its constituent members whose representatives on the Council will be "left in mid-air." Lord Citrine has given an assurance that E.D.A. is to continue in some form, however, and so a new constitution will have to be devised and a governing body appointed which will represent the new owners of the industry—the British Electricity Authority and the Area Electricity Boards, with possibly members from the North of Scotland and Northern Ireland Boards. With this arrangement continuity could be assured. Not only is this year's chairman of the Council (Mr. H. F. Carpenter) also secretary of the B.E.A., but many of its members have been appointed to leading positions in the new electricity supply organization.

Factory Installations

IN view of the wide range of conditions which electrical installations in factories have to meet, and hence the varying quality of technical knowledge to be found among those responsible for their upkeep, the draft Code of Practice announced on page 324 has a more immediately practical value than most of its predecessors. It does more than set out conditions that are generally recognized as good practice by those accustomed to dealing in such matters on a relatively large scale. Its instructional features should ensure a wide circulation in final form among an increasingly important section of electrical men who too often have little to guide them and learn in the slow school of experience at the expense of their employers.

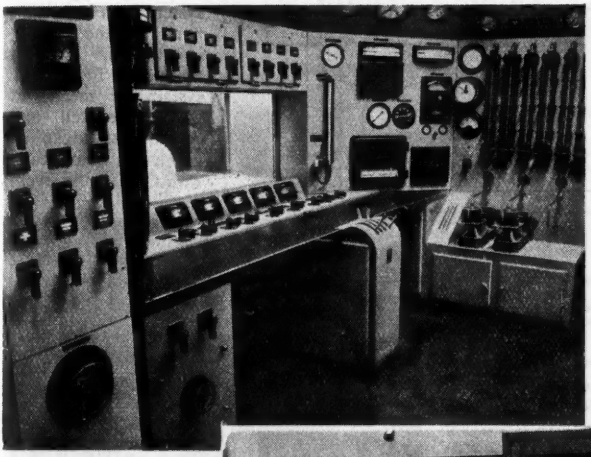
Fair Trading

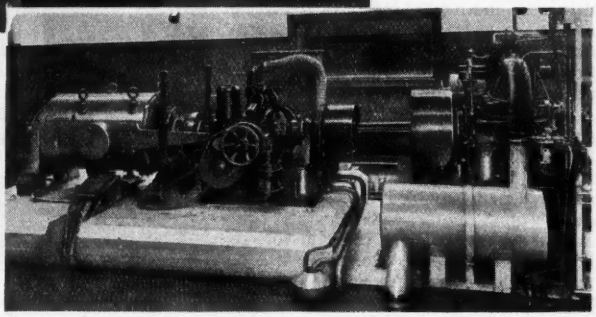
TRADING conditions in the electrical industry are bound to be affected by the operation of the 1947 Electricity Act but it may be hoped that nothing like a revolution will occur. Thanks very largely to the activities of the Electrical Fair Trading Council during the past fifteen years, the electrical industry is a comparatively orderly one. Relationships between manufacturers, wholesalers, retailers and "recognized users" have been put on a rational basis so that each receives a reasonable reward and the public is better served than it would have been by the "free for all" methods prevalent in some trades. Of course everything is not perfect, but such imperfections as exist may be attributed to some extent to lack of knowledge of the Council's work by some in the industry—largely newcomers. The Council is seeking to remedy this by a greater measure of publicity for its work addressed particularly to members of the main branches of the electrical trade.

Research on Liquid Fuels

Electrical Applications to the Testing of Piston Engines

DURING a recent visit to the Research Centre of the Shell Refining & Marketing Co., Ltd., at Thornton-le-Moors, Cheshire, we saw the research work which is being carried out on liquid fuels in different types of internal combustion engines. In this first article we propose to confine our attention to the four main types of piston engines dealt with: (*a*) Full-scale single-cylinder aero engines; (*b*) engines built specially for research work, such as the Co-operative Fuel Research engine and the Ricardo E6; (*c*) complete automobile engines; and (*d*) small air-cooled stationary engines.

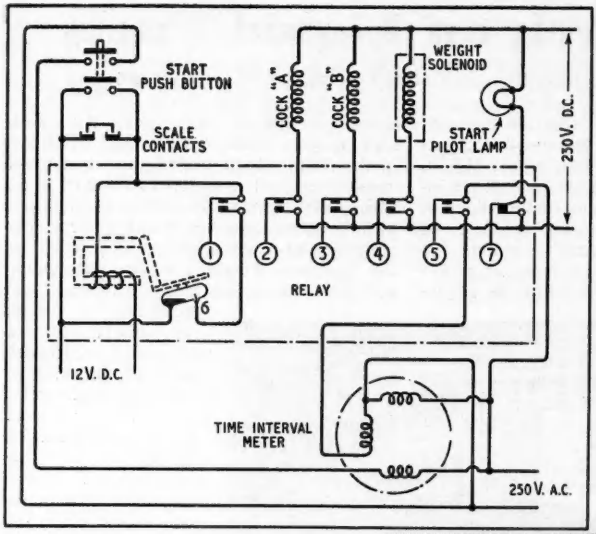




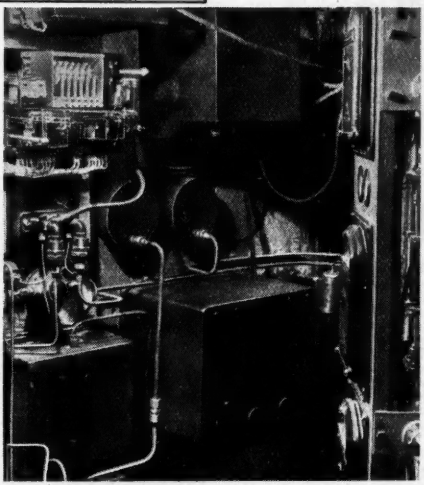
The set-up for full-scale aero-engine testing consists of the engine coupled to a water brake which, in turn, is coupled to an electrical dynamometer. The control equipment and instruments (above) are arranged in an adjacent room and centred on a board around the observation window

There are several testing installations for this work at the Centre, but they are all rather similar, and it will facilitate this description if it reads mainly as if reference is made to one installation only, for a full-scale single-cylinder aero-engine. Further, in the main, all the testing equipments and methods are rather similar to some of those which we have already described in connection with the actual testing of engine performances pertaining to aero-engine production, but at the Thornton Research Centre the engine performances are interpreted in terms of fuel properties to which the researches are directed. Closely allied to the research work on fuels, similar research is conducted at the Centre on lubricating oils for the same types of engines, but as the same equipments are employed in both cases it will be unnecessary from the electrical point of view to make more than this passing reference to the work on lubricating oils.

The set-up for full-scale aero-engine testing consists of the engine to be used for the particular tests at any one time coupled to a Heenan & Froude water brake which, in turn, is coupled to an electrical dynamometer for starting purposes, for the measurement of motoring friction losses, and for power absorption. The dynamometer is a 120-h.p. English Electric compound-wound, swinging-frame machine



An automatic fuel-weighing system has been devised whereby the time taken to consume a given weight of fuel and the number of engine revolutions during the weighing period are recorded; above, electrical system diagram; right, controlling and pressure-stats and (on opposite page) fuel system diagram



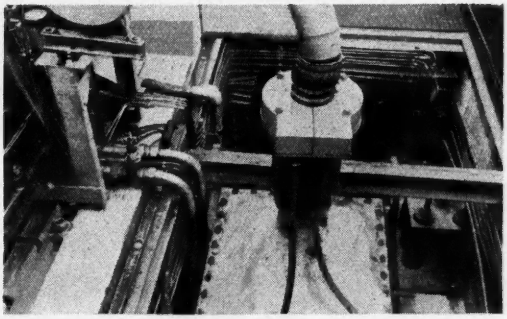
with directly-coupled overspeed protection, and it has been tested to 6,000 r.p.m. For motoring the engine the power is derived from a motor-generator set, to be referred to later, while for power absorption the dynamometer feeds back to the low-voltage switchboard, also to be referred to later, from which the m.g. set is otherwise supplied. The m.g. set is suitable for Ward Leonard control of the dynamometer, and it comprises a 155-h.p. English Electric synchronous induction motor directly coupled to a d.c. 600-V shunt-wound motor with separate field excitation from a main constant-voltage house m.g. set at 230 V d.c.

The whole set-up is arranged on a "spring"-mounted concrete bed to prevent the transmission of the engine vibrations to the test cell, i.e., the room housing all the testing equipment. The cell is sound proofed and about 23 ft long, 20 ft wide and 12 ft high (7 by 6 by 3·7 m). The control equipment and instruments are arranged in an adjacent room from which the test installation in the cell can be seen through a large window in the partition wall. Special precautions have been taken to ensure adequate ventilation and temperature control of the cell, and this is effected by a steam-heated plenum system which is thermostatically controlled. The steam is provided by oil-fired boilers and an auxiliary 250-kW Bastian & Allen electrode boiler. A fire-extinguishing system is an important part of the testing installation, and a Pyrene fusible-link system by means of which the cell and control room can be flooded automatically with CO_2 in the event of fire is also arranged to shut down the test engine and cut off the fuel supply at the same time.

The main control devices and instruments are centred on nine panels assembled around the observation window in the control room. The instrumentation includes various gauges and indicators for measuring the lubricating oil, cooling air and exhaust pressures and temperatures, etc. The com-

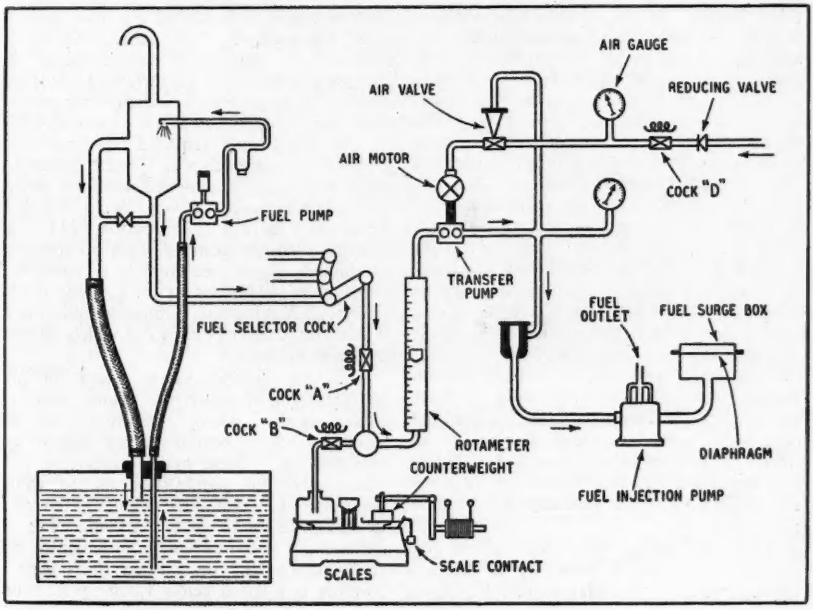
bustion air flow is measured by an Alcock viscous flow air meter, the pressure drop being recorded by a manometer. The fuel flow is measured both by rotameters and gravimetrically. In this connection an automatic fuel-weighing system has been devised, so that by the operation of a push-button the time taken to consume a given weight of fuel is recorded by a time interval meter, which incorporates a revolution counter, by which the actual number of engine revolutions during the weighing period is recorded. Before the weighing operations the engine fuel supply is transferred from outside fuel barrels and header tanks to beakers mounted on weighing scales.

An outstanding advantage of determining the fuel flow gravimetrically is that it eliminates the necessity for corrections arising out of differences in the specific gravities of the fuels. In the modern installations electromagnetic cocks have replaced the manual ones, and a relay has been designed to carry out the whole sequence of operations involved as the result of impulses effected by suitable contacts on the scale arm. Three test fuels are available simultaneously to the triplicated fuel system, and from the header tanks the fuel can flow either directly to the engine or to the beakers on the weighing scales as required.

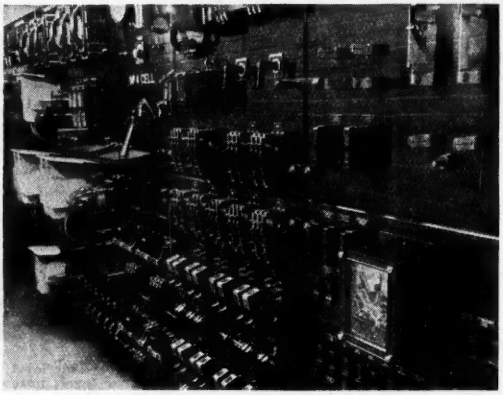


The main boost-air heaters are in a chamber below floor level and the auxiliary heater chamber is above floor level; note spring-mounting arrangements for test bed

The following is a brief description of the



automatic sequence of operations, with reference to the accompanying diagrams. Commencing with a full beaker on the scales and the fuel flow to the engine direct from the header tank, the start push-button is operated. This operates the relay from its normal contact position (No. 7 contact closed) to the push-button impulse position (Nos. 2 and 3 contacts closed), whereby both the electro-magnetic cocks are energized, thus shutting off the fuel from the header tank and opening up the supply from the beaker. As the fuel in the beaker is used the scales swing and cause a mercury contact to operate the relay to the scale contacts impulse position (Nos. 4 and 5 contacts close and Nos. 2 and 3 remain closed), when the designated weight is lifted from the scales by a solenoid and the fuel beaker pan again descends. Simultaneously with the lifting of the weight the time interval meter is started.



The automatic switchboard for each cell is separately housed in a room immediately above the cell

When the designated weight of fuel has been used from the beaker the scales swing again and the relay is operated to the scale contacts close position (Nos. 2, 4 and 5 contacts open and No. 1 closes). In this position the time interval meter is stopped, the weight is returned to the scale pan and cock A is opened to allow the beaker to refill and to supply the engine fuel. During this operation the fuel beaker pan is in the top position and the mercury dip contacts are closed.

After the beaker has been refilled the whole mechanism is reset by a mercury tipping switch on the relay armature in series with the armature coil, and by the making of a contact on the relay camshaft in the scale contacts close position, as follows. When the scale contacts break with the relay in the scale contact open position (Nos. 1 and 3 contacts open and No. 7 closes) the relay armature is released and contact is made through the mercury switch to bring the armature in again. This last impulse rotates the camshaft to break the series contact, returns the whole apparatus to the original position, and relights a signal on the main panel. The time-interval meter is fitted with an electrical resetting mechanism which returns the indicator to zero at the commencement of the subsequent fuel-weighing operation. The duration of one operation is thus indicated until the commencement of the next.

When a test is to be conducted the petrol, an independent lubricating oil circulating pump, the heaters for the lubricating oil, the coolant circulating pump or the cooling air fan, and the external combustion air have been turned and/or switched on. The motor is then started up, thus turning over the engine. The lubricating oil is heated either by steam or electrically by means of immersion heaters, and is continuously circulated by the independent system. The engine is motored up to about 1,000 r.p.m., until the required lubricating-oil pressures are established. The "external" combustion air is supplied by four rotary compressors, each driven by a 120-h.p. Laurence Scott synchronous induction motor. The air from all these compressors is passed into a receiver at a controlled pressure of 40 lb per sq in. (2·8 kg/sq cm) and is then fed through a common manifold to a separate receiver in each cell which absorbs surges in the system.

Next the ignition system is switched on, as the result of which the engine starts up under its own power. At this point the electrical boost combustion air heaters are switched on. These heaters raise the temperature of the combustion air to values encountered on main aero engines as the result of compression in supercharging. The air heaters are so controlled automatically that they cannot be "on" when the engine is running at a speed below 1,000 r.p.m. They

are arranged in chambers connected in the trunk mains leading to the engine air inlet and are in two sections. The 72-kW main section is in a chamber below floor level, and the heater bank is supplied at three-phase. It is operated in three steps of 6 kW each and three steps of 18 kW each. For finer control one of the 6-kW steps is operated via a " Variac " auto transformer.

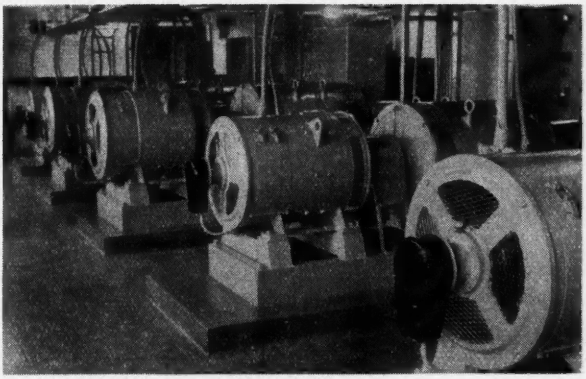
The air passes from the 72-kW main chamber to the 6-kW auxiliary chamber which is above the floor level. The auxiliary heater is supplied at single-phase and is controlled automatically, via a " Variac " auto transformer by means of a pyrometer system, to give the final close control to a predetermined temperature. The usual required temperature range is from atmospheric up to 150 deg C. The boost air pressure is automatically controlled by a Foxborough " Stabilog " pressure controller. As the engine is brought in line with operating conditions the load is adjusted by the operation of a two-position switch. The set-up is now ready for the tests, a major object of which is to express in terms of weight of fuel consumed per unit time, or per b.h.p.-hour.

In the case of liquid-cooled engines the coolant temperature is maintained at a predetermined value by Negretti & Zambra mercury-in-steel remote reading thermometers which control pneumatically operated throttling valves. In certain cases the various water, steam and compressed-air supplies are controlled by magnetic valves operated from the control board. The brake load is transmitted through a lever system to a balance mounted on the control board.

From the foregoing description of a test it will be realized that test conditions are accurately controlled, automatically wherever possible. Full and accurate determination of engine performance is essential for assessing the anti-knock values of aviation and motor fuels. Efforts to improve the fuel economy of piston engines by various injection systems involves the measurement of power output and fuel consumption within one per cent, since small improvements in this direction on single-cylinder units may represent considerable savings in fuel, when applied to main engines in service.

The electricity supplies for the testing installations are taken from two 1,000-kVA transformers which feed at 440 V a cubicle-type 25-MVA air circuit breaker switchboard with two 1,600-A incoming units and a 600-A unit for each test cell. Each outgoing breaker serves a motor-generator set which supplies the dynamometer in the test cell at 600 V, d.c., via an open-type flat-back automatic switchboard. The automatic board for each cell is separately housed in a room immediately above the cell, while the main a.c. board and the m.g. sets are all centrally housed in a room common to the complete installation. The automatic switchboard comprises seven panels with accommodation as follows: A, incoming supply, exhaust and inlet ventilating fan starter equipment; B, cooling air fan starter; C, boost air heater contactor; D, auxiliary motor; E, m.g. set main switch; F, dynamometer controls; and G, the alarm system.

We are indebted to the Shell Refining & Marketing Co., Ltd., for permission to visit the Centre and publish this article, and to Mr. B. R. Jones, engineer-in-charge plant and buildings division, Mr. G. H. M. Finny, chief electrical engineer, and Mr. A. R. Griffin, test engineer, for their help in the preparation of this article.



The m.g. sets are all centrally housed in a room common to the complete installation; the 400-V cubicle-type switchboard supplies and receives power from the dynamometers via the m.g. sets

Views on the News

Reflections on Current Topics

SOMETHING like the British idea of justice is behind the principle on which the new E.D.A.-B.S.I. Testing House is to be run: an appliance will be considered safe until it is proved otherwise. It is inevitable that many inferior appliances will escape detection until they have caused trouble and for this reason an approving organization would be preferable. Still the two associations have made a substantial forward move and electricity supply authorities as well as the public (if it can be kept acquainted with the existence of the Testing House) should bring forward any appliances which they believe to be dangerous.

* * *

I was asked the other day if I could quote the first use of the term " electrician." Well this is just one of those things which are taken for granted; I had to confess my ignorance but hazarded a guess that it might have been used by or about Benjamin Franklin (1706-1790). Later it occurred to me that possibly William Gilbert may have coined the word round about 1600. Perhaps some reader can help with chapter and verse. At all events the nature of the " electrician " has changed since he was first thought of. He was originally an electrical scientist, later he was what we now know as an electrical engineer (e.g., chief electrician of the Post Office), and now he is a skilled craftsman, although the title is too often usurped by people who are anything but skilled.

* * *

" Every man to his trade " has a very precise meaning nowadays. Some months ago bricklayers working on the extension to the North Wilford (Nottingham) power station " downed tools " because electricians on the site began to set up pre-cast concrete cells for switchgear. The matter has been under discussion ever since but now a settlement has been reached by which the electricians undertake not to use the trowel again; the cells will be erected by bricklayers or masons.

* * *

Mr. R. E. Sadler of Hove was only just in time when he summoned the mayor, aldermen and burgesses of that town for their refusal to provide him with the extra supply of electricity for which he asked them (or more probably the Electricity Department). He won his case but the mayor, etc., were let off under the Probation of Offenders Act; they were said to be liable to penalties amounting to £2 a day for about seven weeks. I say that Mr. Sadler (who was awarded ten guineas costs) was just in time, for a day or two later the Minister of Fuel and Power issued his Electricity Supply (Relaxation of Obligations) Order which permits supply authorities to use their discretion in the matter of new connections and extensions.

* * *

Government departments are, I think, somewhat inclined to get false ideas as to the relative values to the community of certain classes of employment. As a case in point, Mr. B. G. Neden, resident manager of the Beds, Cambs and Hunts Electricity Co., St. Neots, is to be supported by the local Council in his application for a permit to build himself a house. The Council's view is that Mr. Neden is a key worker and, as such, is entitled to a permit, but the Ministry of Health contends that he is not a key worker. If Mr. Neden were a miner or an agricultural worker the Ministry's attitude might be different. I'm not suggesting anything but an electricity failure might help Mr. Neden's case.

* * *

I agree with Mr. E. G. Batt who said last week at the British Refrigeration Association luncheon that the slogan " Export and Live " was preferable to the official " Export or Die." A great deal of morbidity is shown by whoever is responsible for devising these Government exhortations. Another one " We Work or Want " has led to derisive remarks among the workers who suggest the substitution of " and " for " or "; why not " Work for Improvement " or something of that kind? Both of the depressing slogans mentioned should go the way of " Keep Death Off the Roads " which has now become " Get Home Safe and Sound."

* * *

A gloomy view is taken by a Scarborough councillor of a proposed dinner to mark the passing of the electricity undertaking to the State. He thinks that it is not a matter for celebration but regret. " The appropriate refrain is not the National Anthem but the Dead March in *Saul*."—**REFLECTOR.**

Electricity Economy

Suggested Restrictions in Supplies

AT the request of the Minister of Fuel and Power, the Electricity Commissioners have asked all electricity authorities to take active steps to ensure that the efforts of industrial concerns shall not be nullified by uncontrolled domestic use.

Undertakings are asked to take appropriate steps to restrict new non-industrial development. It is suggested that new services and apparatus (especially on hire or hire-purchase) should only be provided (as during the war) for essential public service requirements; new domestic or commercial premises; war-damaged houses which have been made habitable again or houses which have been divided into separate tenancies; farms and farm-workers' cottages where the County Agricultural Executive Committee certifies that the installation will help to increase food production; existing premises where the present facilities are worn out, or serious hardship would result if the supply were not provided; or where a medical certificate justifies the supply on grounds of health.

Where electric cookers and water-heaters, other than wash-boilers or kettles, having a load of 2 kW or over are both installed in new homes or flats, or where either is installed in an existing home where the other already exists, there should, where practicable, be a change-over switch to prevent use of both appliances at once.

In the case of all existing premises new or additional supplies for space-heating purposes should be discouraged and supplies for cooking purposes should be provided only where no reasonable alternative exists.

To protect undertakers the Minister has made the Electricity Supply (Relaxation of Obligations) Order, 1948 (referred to in our last issue) absolving them from their obligations to give new or additional supplies.

The Minister has investigated the possibility of still further restricting the output of consumers' apparatus. The production of electric fires for the home market has already been reduced to 5 per cent of the industry's capacity through the use of the Ministry of Works licensing powers and it is regarded as virtually certain that any further restriction would prove ineffective. Consideration has also been given to the licensing of retail sales of electric fires, but the difficulties of enforcement appear to be too serious. The manufacture of electric water heaters for the home market has already been severely restricted to limits consonant with the new housing programme. The Minister of Works has undertaken to remind local authorities and licensing officers that building licences for installation work are required to cover also the cost of the apparatus. It is understood that the whole position will be reviewed in the summer.

Refrigeration Industry

Association's Annual Luncheon

ON 18th February the British Refrigeration Association held its third annual luncheon (of the "buffet" type this year) at the Connaught Rooms, London, W.C.2. Mr. E. G. Batt, director of the B.R.A., presided over a company of more than 500, and the principal guest was Mr. J. H. Jones, Parliamentary Secretary to the Ministry of Supply.

The toast of the Association was proposed by MR. JONES, who spoke of his Ministry's dealings with refrigerator makers. The Ministry, he said, often had to say "No" to requests for materials but they always gave reasons for their answer. He praised the refrigeration industry for having practically eliminated sour milk, tainted meat and bad fish and particularly for its work during the war. Mr. Jones said that the supply of material was so limited that they could not afford to allot it to anyone who would not produce something of which the country could be proud. We had to produce more and better goods at competitive prices and with our inherent skill, backed by science, it could be done.

In his response MR. BATT said that next year he would not be in the chair for the Association would have a president. During the last four years membership had more than doubled; there were now 415 sectional members. It was proposed to form a new section dealing with the distribution and servicing of domestic refrigerators.

After a reference to the Association's fair trading codes, Mr. Batt said that the educational scheme mentioned last year had now been established. There would be a National College of Heating, Ventilating, Refrigeration and Fan Engineering at the Borough Polytechnic, London, and training classes had been arranged at Manchester, Glasgow and Rotherham. A joint committee of the Institute of Refrigeration and the B.R.A. was drawing up a simplified syllabus for service engineers.

Standardization had continued to receive attention; it was expected that a specification covering condensing units up to 5 h.p. would be issued shortly and further specifications were in hand. The specification for domestic electric refrigerators was to be modernized.

With the co-operation of members and non-

members an export plan for the refrigerating industry as a whole had been prepared but they had found the position with regard to the supply of materials and licensing values to be most unsatisfactory. In the speaker's opinion too much material was now being absorbed in useless and shoddy articles of various sorts and this was largely the Government's fault. Too many manufacturing licences had been granted in their own industry, with the result that no manufacturer could produce economically and consequently the export market could not be satisfied. Again, a number of firms, pressed by the Government, had expanded their production facilities only to find that there was no hope of fully using them.

In spite of all this the refrigeration industry, which had been set a hard export task, would do its utmost to meet the requirements but it would need faith and energy and sympathetic treatment from the Government.

In conclusion Mr. Batt referred to the Government's statement on prices and profits and emphasized that this problem involved not only manufacturing costs and margins but also wholesale and retail distribution margins.

Trade With China

Mission's Report

IN the last quarter of 1946 a United Kingdom Trade Mission visited China to study conditions there and consider the best methods of developing trade between this country and China. The chairman was Sir Leslie Boyce, K.B.E., and one of the members was Mr. D. Maxwell Buist, M.I.E.E., export director of the British Electrical and Allied Manufacturers' Association.

After delays due to printing difficulties, etc., the Mission's report has now been published by H.M. Stationery Office at 5s. It is a 230-page document with four maps and a fair proportion of the matter deals with electrical subjects. One section (XI) deals with electricity generation and supply which is said to be in an even more precarious position now than before the war. With the exception of a few large undertakings, such as the Shanghai and Yangtze Power Companies and a few lesser plants electricity supply is Government-owned.

The total installed capacity in China (excluding Manchuria and Taiwan) was only about 894,000 kW in 1946. China is in urgent need of plant and immediate requirements are put at 350,000 kW. At a second stage another 450,000 kW would be wanted, giving a total of 800,000 kW in units varying from 200 to 20,000 kW, mostly steam, with the necessary transmission and distribution equipment.

Reference is made to the Yangtze Valley hydro-electric project estimated to provide 10 million kW at a cost of £250 million, but, as we reported in our 13th February issue, this scheme has been "temporarily suspended." In Shanghai the combined generating capacity of five companies was reduced during the war from 263,000 kW to 147,000 kW and plant is urgently needed to meet the growing demand. The Taiwan plant was similarly reduced but the demand is below the potential output and so there is a surplus, estimated to be 120,000 kW by the middle of 1947. There is expected to be a reasonably good demand for badly-needed electrical accessories, motors, transformers, switchgear, welding equipment and cables.

It was impossible to obtain accurate information on the state of power supply in Manchuria. Much of the plant had been removed and the net amount available at the end of 1946 was only about 320,000 kW (17 per cent of the original capacity). When a start is made on restoration electrical equipment of every kind will be urgently required. Meanwhile oil-engine sets of all sizes are in great demand.

There is a shortage in China of skilled and well-trained staff. It is thought that opportunities should be given to young Chinese engineers to become acquainted with the actual operation of British power plant. Also more British technical experts should be available for the representation in China of British electrical manufacturers to discuss problems involved in the planning of electricity schemes.

Before the war British manufacturers were the leading suppliers of steam turbo-generator plant but there was growing competition from America and Japan. The post-war position is very difficult, but by the time China is settled enough to enable electrification schemes to be proceeded with Britain will again be in a position to contribute fully towards the rehabilitation of China's electrical industry.

In a section (XX) on electrical manufacturing it is shown that during the three years before the outbreak of the Sino-Japanese war the average annual value of electrical imports was about £5·5 million contributed as to 28 per cent by Germany, 17 per cent by Japan, 24 per cent by the United Kingdom and 21 per cent by the United States. With German and Japanese competition temporarily eliminated, the United States is making great efforts to increase her share of the market but it is considered that British manufacturers, who enjoy a high reputation, should obtain a due share of the trade if an active commercial policy is pursued.

In a later section dealing with telecommunications it is stated that British manufacturers of equipment should be encouraged to extend all possible help to China based on their long and world-wide experience.

Telemetering Equipment

Novel Means of Indicating kWh and Maximum Demand at a Distance

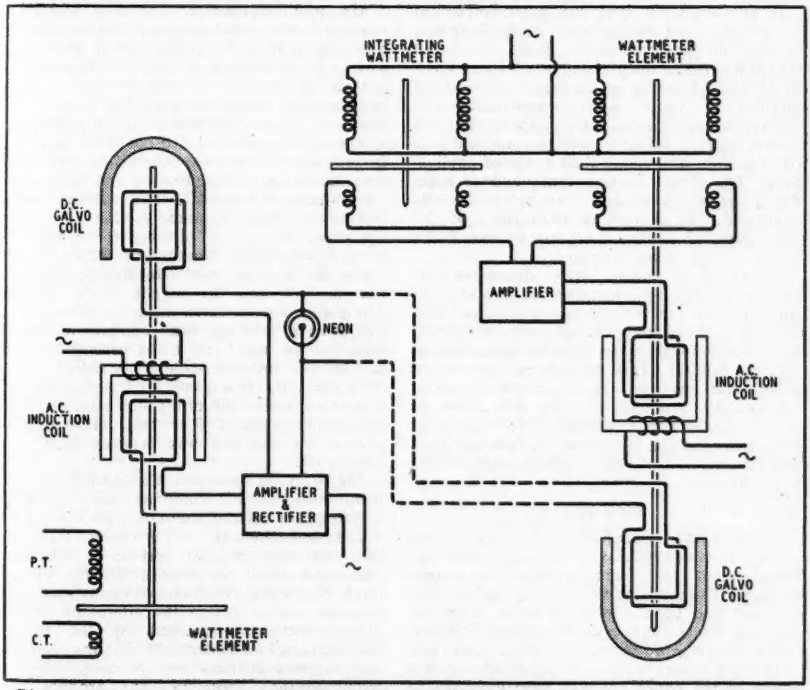
NEARLY ten years ago a telemeter was introduced by Measurement, Ltd., for reproducing the indication of a distant wattmeter or summating several of them algebraically by paralleling their outputs for continuous indication of aggregate load.

The transmitting wattmeter, single or three phase, is an induction instrument. Its moving disc exerts torque (proportional to kW measured) upon the spindle which carries a coil between the poles of an a.c. electromagnet (separately excited, 30 VA at 110 or 230 V, from an auxiliary source) forming an induction regulator; while attached to the top of the same spindle is another coil between the poles of a permanent magnet, forming a galvanometer. The induced a.c. e.m.f. of the regulator coil is applied to the grid of a rectifier-amplifier valve whose d.c. output is in series with the galvanometer coil, thence along the pilot cable to the distant receiving indicator which is a d.c. milliammeter calibrated in kW.

So long as the wattmeter torque equals the opposing galvanometer torque, the d.c. mA conveyed to the receiver will be proportional to the load applied to the transmitter. Increasing wattage (disc torque exceeding coil torque) will turn the spindle, so rotating the regulator to raise the voltage input to the rectifier which, in turn, will increase its mA output until movement is stopped by restoration of torque balance. Diminishing wattage reverses the sequence, reducing the induced voltage and rectifier output for counterbalancing.

When the transmitter is in a circuit subject to two-way power flow, a two-valve rectifier is employed for automatically reversing the polarity of the d.c. furnished to the receivers, which then must be centre-zero instruments.

The latest development is the announcement of an integrating convertor as a novel means of distantly indicating kWh as well as maximum demand. It is basically a reversed form of the



Diagrammatic representation of telewatt-metering principle, showing transmitter (left) and convertor (right) with intervening (dotted) pilot line

transmitting telemeter, equally elegant in principle and not more complicated in construction. The d.c. received is made to energize the galvanometer element; the latter's torque is thus proportional to the watts being measured, which may be the summated values of a number of loads. The disc (now at the top of the common spindle) represents part of an ordinary wattmeter; the latter's potential coil is energized from an auxiliary a.c. source while its current coils are fed from the amplifier controlled by the induction regulator.

Thus connection of an integrating watthour meter in series on the current side and in parallel on the potential side, will provide an integrated value equal to the actual kWh consumed in the circuit being metered. The attachment of maximum demand indicators to the kWh-meter is normal procedure.

It is to be noted that wide variations of resistance, temperature, valve outputs, auxiliary voltages and frequencies do not affect the accuracy of the transmitter or receiver; neither of which employs springs, contacts, rheostats, motors, or batteries, which might influence reliability or need much maintenance.

Vertical Shaft Generators

Mechanical Problems in Design

SOME of the mechanical problems involved in the design of large diameter vertical shaft water-turbine-driven alternators in the 50-500 r.p.m. speed range are discussed and various alternative solutions suggested in a paper prepared by MESSRS. E. M. JOHNSON and C. P. HOLDER (Metropolitan-Vickers Electrical Co., Ltd.) for the Institution of Electrical Engineers.

It is considered that the most important advantage of the vertical shaft design is that it permits the generator to be placed above and the turbine below the maximum tail water level, so avoiding flooding of the generator without sacrifice of head. After summarizing the considerations affecting rotor design the authors review in detail different types of rotor and pole construction, illustrating their range of application. The thrust bearing types and arrangements are examined and their relative merits compared; an increasing proportion of the larger sizes of generator are now built with the thrust bearing below the rotor.

Reference is made, while discussing the cooling of bearings, to a recent development whereby motor-driven pumps are dispensed with and oil is circulated through external coolers by the centrifugal pumping action of the thrust bearing runner. This arrangement is not in general use, however. In the section on special air cooling arrangements for this class of generator, the use of generator ventilating air for station heating is mentioned, followed by a brief description of rotor braking and jacking arrangements.

Discussion

Opening the discussion on the paper, MR. J. W. HOWARD (G.E.C.) said that little encouragement had been received by manufacturers from the home market, though that position had been altered to some extent by Scottish hydro-electric developments. British manufacturers, however, had done very well with their export work. He regretted that the scope of the paper had not been extended to include higher speeds, which were coming into fashion. At the moment he was having to deal with a vertical alternator of the water-wheel type for an output of over 30,000 kW at 600 r.p.m. He mentioned plant near Geneva in which the rotor was built up of six complete rings side by side, each ring being made up of five discs and each disc consisting of five plates which were welded, bolts not being used.

MR. P. L. BLACKSTONE (Merz & McLellan) referred to the recent production in Russia of a series of small and medium power alternators with a single bearing, as in the umbrella type, but above the rotor, so that the lower bearing and bracket could be dispensed with. The ability to do that depended on the calculation of the critical speed, which could be improved by reducing the distance between the alternator bearing and the turbine bearing or by increasing the diameter of the shaft. The Russians used a high-speed exciter mounted on the side of the alternator casing and driving it by multiple ropes from a pulley mounted on the main shaft above the bearing, thus reducing the height of the machine and the weight of the exciter. The pulley was mounted inside an extension of the bearing housing and regenerative brakes were put on top, fixed to the bearing bracket, and bore on the under-side of the pulley driving the exciter. By these means the Russians claimed a saving in the weight of the alternator of 25 per cent and in labour of 20 per cent. The maximum size at the moment was between 4,000 and 5,000 kVA.

MR. F. A. YOUNGMARK (English Electric Co.) mentioned that his company was at present building four vertical alternators of 57,400 kVA at 214 r.p.m. Referring to the authors' statement that with the Kaplan turbine a maximum overspeed equal to three times the normal might be reached, he said his company's standard practice was to design the alternator for the actual overspeed specified by the turbine designers, but he understood that the view was held in some quarters that the combination of circumstances necessary to produce the maximum overspeed was very unlikely to be

realized in practice, and that, therefore, it was allowable to design the alternator for a somewhat lower figure. He did not agree with the authors that, if bearings of the Michell type were used, the deflection of the bracket carrying the bearing must be small, as otherwise the alignment of the pads would suffer.

MR. L. D. ANSCOMBE (B.T.H.) said that the fact that high-speed machines were not able to meet a very high inertia constant was remedied by the addition of a flywheel, but that, while satisfactory in most cases, was less desirable with a vertical than with a horizontal unit. At present there was a marked trend in Continental practice towards very much higher running speeds and most designers catering for export business involving fairly high heads were probably having difficulty in realizing the requirements of the turbine makers. An appreciable increase in cost was involved in the increased inertia constants stipulated, probably resulting in an increase in the cost of the alternator of about 25 per cent.

MR. S. NEVILLE (Metropolitan-Vickers) suggested that it would be an advantage to have a tabulation of the flywheel effect, in terms of stored energy per kW or inertia constant, which had actually been embodied in some of the world's larger power units. He thought it would be found that the range was very large. Large and abnormal flywheel effects, apart from their effect on the cost of the machine, inevitably led to reduced efficiency due to large wattage losses and large stray load losses, which could be offset only by using all the active materials, magnetic and electric, at unusually low densities, with a further increase in cost. It was often not realized that in large vertical machines a great part of the load on the thrust bearing came from the turbine. In some cases, about three-quarters of the total load was imposed by the mere weight of the water bearing on the turbine.

MR. W. J. FLETCHER (Harland Engineering Co.) said that no mention had been made of induction generators of the non-synchronous type, possibly because of the difficulties of constructing very large ones. They had, however, a valuable characteristic, in that they could supply a large proportion of leading kVA when the generator was a long way from the load centre.

DR. J. H. WALKER pointed out that as units became larger and speeds higher, one of the most difficult problems was to determine what type of dovetail would withstand the very high stresses at overspeeds. Even with the multiple T-headed dovetail it was sometimes necessary to use four dovetails per pole. This might mean widening the pole, which left less room for the field winding, and might thus involve a longer or larger machine. To some extent the difficulty might be overcome by using a type of field winding provided with fins at the sides as well as the ends, which would improve the dissipating power as compared with an existing coil by a factor of between 1·5 and 2.

MR. R. A. HORE said that to deal with the high stresses in the dovetails a French designer had suggested the use of aluminium field coils on large water-wheel alternators, which would reduce the stress in a dovetail due to the field coil in the ratio of 3 to 1. He also advocated the use of higher carbon steels in the spider and the poles. By those means he maintained that the peripheral speeds could be largely increased.

MR. C. P. HOLDER replied to the discussion.

Commercial Travellers' Luncheon

THE annual luncheon of the Electrical Trades Commercial Travellers' Association was held on Friday last at the Connaught Rooms, London, under the chairmanship of Mr. E. A. Boxall, when over 500 members and guests attended. The guest of honour was Sir Claude James, Agent-General for Tasmania, who, in proposing the toast of "The Association," referred to hydro-electric development in Tasmania, which possessed 75 per cent of the water power resources of Australia with an estimated possible production of two million h.p. He thanked manufacturers in this country for providing the plant.

Mr. C. Hughes, president of the Association, in responding, said that the Association had been in existence for twenty-three years and had a membership of 600. During its existence it had contributed upwards of £5,000 to various charities including the Royal Commercial Travellers' School and the Electrical Industries Benevolent Association. The days were approaching when the salesman would come into his own again. The Association was expanding; a branch had been opened during the year in Birmingham with fifty members. They hoped this year to open further branches in Manchester and Glasgow.

The toast of "The Guests" was proposed by Mr. D. G. E. Barrie and responded to by Mr. H. G. T. Gamble. Mr. H. G. Potton proposed the toast of the chairman, and Mr. Boxall replied. An appeal for the Association's charities resulted in the collection of £90.

Price Control of Goods

MANY electrical items, including cooking and heating appliances, fans, clocks, radio and television sets, wires and flex, torches, etc., are covered by orders made on Tuesday by the President of the Board of Trade to give effect to the changes in price control policy announced by the Chancellor of the Exchequer on 12th February. The manufacturer's maximum price is fixed at the lowest price being charged in respect of any class of customer for similar goods sold in the basic period 1st December, 1947, to 31st January, 1948. In the case of certain goods sold on the "cost plus" basis increased wages agreed after 4th February may not be added to the price without the Board of Trade's approval.

PERSONAL and SOCIAL

News of Men and Women of the Industry

AT the recent annual meeting of the **British Electrical & Allied Industries Research Association** the following were elected or re-elected to the Council:—Messrs. R. Lee, H. Bentham, J. K. Brown, L. J. Davies, P. V. Hunter and J. S. A. Bunting.

Sir Richard Southwell, F.R.S., Rector of the Imperial College of Science and Technology, has asked leave to decline the proposal of the governing body that his term of appointment should be prolonged and has decided to retire on 30th September next. Sir Richard has been Rector since 1942.

Mr. D. H. Parry, chief assistant engineer in the Leicester Corporation Electricity Department, has been appointed chief engineer in succession to **Mr. J. Mould,** who leaves at the beginning of April to take up his duties as deputy chairman of the East Midlands Electricity Board. Mr. Parry went to Leicester in 1928 from the English Electric Co., to be constructional superintendent. He was educated at King Edward High School, Birmingham, and Birmingham University, and served with the Royal Engineers in 1914-18.

Mr. R. Harvey, B.Sc., who has been appointed manager of the E.D.A. Testing House, has been on the staff of the G.E.C. Research Laboratories, Wembley, since 1931. Mr. Harvey was educated at Holloway School, and joined the G.E.C. staff as a student assistant. He holds the London B.Sc. degree. During his service at Wembley he worked in the heating development laboratory on the development and testing of domestic appliances. During the war he had charge of a small-scale self-contained unit which was engaged in making equipment such as radar cathode-ray tubes for the Services so that they could be tried out on a large scale before going into production in the factories.

Mr. R. Harvey

Mr. L. S. Hargreaves, managing director of Aerialite, Ltd., sailed in the *Warwick Castle* from Southampton on 12th February on a visit to South Africa to extend the company's export activities.

Because of his long service with the electricity undertaking, the Hornsey Borough Council has decided not to exercise an option to pay **Mr. C. March,** newly appointed acting chief electrical engineer and manager, reduced percentages of the scheduled salary for his first two years in the position. It was agreed to pay him the full schedule of £1,288 a year, plus £125 car allowance, as from the date of his new appointment.

Mr. A. J. C. DeRenzi, who has been engineer and manager of the Newcastle-under-Lyme electricity undertaking for forty years, has decided to retire on superannuation a few days before vesting date. Mr. DeRenzi received his technical education at the South Western Polytechnic, Chelsea, and the Manchester College of Technology and was with the Rochdale undertaking before going to Newcastle in 1905 as assistant engineer. He is best known for his work as hon. secretary of the Committee of Smaller Municipal Electricity Supply Undertakings which arose out of the proposal in the McGowan Committee's Report that the smaller undertakings should be absorbed in larger units. The Committee's opposition was largely instrumental in the abandonment of the proposal.

Mr. A. J. C. DeRenzi

Mr. DeRenzi was elected to the Council of the Incorporated Municipal Electrical Association in 1939; he has been a member continuously since then and has been active on the Association's committees.

Mr. L. T. Hinton, B.Sc., A.C.G.I., M.I.E.E., of Standard Telephones & Cables, Ltd., has been elected chairman of the Radio Communication and Electronic Engineering Association for 1948. **Mr. M. M. Macqueen,** of the General Electric Co., has been elected vice-chairman.

Mr. L. D. Bennett, chairman of Radio & Television Trust, Ltd., is now in the United States where, in addition to visiting the Philco Corporation, Philadelphia, he will examine the export possibilities in America for other products of the group.

Mr. S. Marks, managing director of A.B. Metal Products, Ltd., will be leaving this country on 21st April for a business tour of the United States and Canada. He will be in Toronto on 31st May.

Mr. B. H. J. Berryman, A.M.I.E.E., assistant power station superintendent at Luton, has been appointed power station superintendent with the Douglas (I.O.M.) electricity undertaking.

Mr. H. J. Hodges, chief labour officer of the Henley organization, has completed fifty years with the company, and to mark the occasion the board of the company passed a resolution

expressing appreciation of Mr. Hodges' services. A framed copy of this, together with the customary gift of money given to fifty-year veterans, was presented to Mr. Hodges by Sir Montague Hughman, the chairman, who also handed to him a personal gift from himself and Lady Hughman.

At a luncheon held at the New Bull Hotel, Leatherhead, on 18th February, **Mr. H. C. Booth**, chairman and founder of the British Vacuum Cleaner & Engineering Co., Ltd., was presented with a portrait of himself in oils, painted by David Jagger, and a "Goblin" radiogram. The luncheon was attended by the directors and staff of the company numbering eighty. The presentation was made by Mr. J. J. Hambridge, managing director, who reviewed the development of the company since 1901 when Mr. Booth first invented a vacuum cleaner, and paid tribute to Mr. Booth who, in reply, spoke of his early struggles when the company was first formed in in 1904. Mr. D. W. Watkins, joint managing director and other directors also spoke.

Mr. E. Callow, A.M.I.E.E., of Stoke Newington, has been appointed mains superintendent to the Chesterfield Electricity Department.

Mr. J. W. Smith, who has been associated with the Automatic Telephone & Electric Co., Ltd., for twenty-seven years as accountant and secretary, is retiring. On 17th February, Mr. Smith was presented with a silver salver engraved

Presentation to Mr. J. W. Smith

with the signatures of his colleagues and the picture shows the presentation being made by Mr. A. F. Bennett joint general manager of the company. Mr. G. D. Christie, secretary, is seen on the right.

Mr. V. H. Adcock, B.Sc., M.I.E.E., of G.E.C. (India), Ltd., was recently married to Miss Joyce Cowley at New Delhi. He has sent us a photograph (reproduced herewith) taken at the reception. The guests included Sir Terence Shone, U.K. High Commissioner in India and Lady Shone, Sir Arthur Dean, chairman New Delhi Improvement Trust, and Lady Dean, Mr. B. R. Batra, chief engineer Post and Telegraph Dept., India, and Mrs. Batra, Mr. G. Gramlin, manager of the Delhi Electric Supply & Traction Co., and Mrs. Gamlin.

Group at Mr. V. H. Adcock's wedding reception

Mr. A. D. Sloan, M.I.E.E., chief engineer of the English Electric Co. since 1936, retired at the end of last year. He has been succeeded by **Mr. J. T. Moore,** manager of the company's steam turbine department, Rugby. Mr. Moore is now at the Stafford works.

Mr. H. Latham, A.M.I.E.E., assistant to the electrical engineer to the city architect, Manchester, has been appointed electrical engineer to the county architect of Monmouthshire, and commences his duties at Newport on 1st March. Before going to Manchester in January, 1947, Mr. Latham was assistant to the consumers' engineer, Derby Corporation Electricity Department.

A dinner and dance was held at the Castle Restaurant, Richmond, on the 5th February to celebrate the twenty-first anniversary at Kew Works of **Kent Brothers Electric Wire Co. and E. H. Phillips, Ltd.** Presentations to mark the occasion were made to all members of the staff, the ladies receiving silver pencils and the gentlemen lighters, both engraved. The toast of the company was proposed by Mr. E. J. Bennett, the works superintendent, who has been with the company since its inception. This was responded to by the chairman, Mr. E. H. Phillips, and Mr. C. E. Bantick, works manager, also spoke. In addition to dancing there was a cabaret.

The Dramatic Section of the Sports Club of the **Micanite & Insulators Co., Ltd.,** recently gave a successful performance of Oscar Wilde's comedy "The Importance of Being Earnest." This play was entered for the British Drama League National Festival and was well received by appreciative audiences of the staff and their friends.

Cardiff is the fifth branch of the **Electrical Association for Women** to celebrate its twenty-first birthday. The president of the Association, the Dowager Lady Swaythling, and the director, Dame Caroline Haslett, attended the recent celebrations which took the form of a dinner dance. Lady Swaythling proposed the toast of the branch, to which the chairman, Mrs. B. C. Wilkins, responded. Dame Caroline responded to the toast of the E.A.W. proposed by Mr. L. Howles, M.I.E.E., chairman of the South Wales Electricity Board. The Lord Mayor and Lady Mayoress of Cardiff were among the guests.

Obituary

We record with regret the death, at the age of eighty, of **Mr. J. W. Elliott,** whose experience of the electric lamp industry commenced when Sir Joseph Swan started at Ponders End the first factory equipped to produce electric lamps on a commercial basis. He joined the Edison and Swan United Electric Light Co., Ltd., in 1886, as assistant chief clerk under Mr. W. Young. Later he became manager of Lamp Despatch and, about 1915, joint sales manager. He took an active part in the amalgamation of two existing bodies to form the Electric Lamp Manufacturers' Association. He was chairman of the sales committee of E.L.M.A. in 1927 and of its Lighting Service Bureau in 1929 and 1930. Mr. Elliott was also a past chairman of B.R.V.M.A. He retired in 1930. His son, Mr. W. Elliott, is manager of the Cardiff branch of the Edison Swan Electric Co., Ltd.

Mr. H. O. Davies.—We regret to learn of the death of Mr. H. O. Davies, secretary of the Association of Public Lighting Engineers, which occurred on 17th February, at his residence at Purley, Surrey. Mr. Davies was born in 1889, and was educated at Dulwich College. He became secretary of the Association of Public Lighting Engineers in 1936, and was largely responsible for many successful conferences and lighting exhibitions run annually by the Association.

Mr. R. J. Bambridge —We regret to report the death, at the age of fifty, of Mr. Richard James Bambridge, of Westbury-on-Trym, Bristol, sales manager (western branch) for Hoover, Ltd.

Will.—**Mr. C. B. Gabriel,** managing director Gabriel, Wade & English, Ltd., left £93,515 (net personalty £91,676).

Disposal of I.M.E.A. Funds

At a meeting of the Incorporated Municipal Electrical Association on 19th February the memorandum of association was amended so as to make provision for the use of any residual funds remaining on the dissolution of the Association for the establishment of scholarships. The memorandum as it stood permitted the use of such funds for charitable purposes only.

B.E.A. and Area Boards

Further Appointments

THE British Electricity Authority announces the appointment of the following to be deputy chief accountants:—**Mr. A. M. Scott,** M.C., C.A., **Mr. F. H. Grigsby,** O.B.E., F.S.S., **Mr. E. Long,** F.S.A.A., F.C.I.S., F.R.S.S., and **Mr. H. F. Dubuis,** A.M.I.C.A. Since 1936 Mr. Scott has been controller of Edmundsons Electricity Corporation; Mr. Grigsby has been in charge of the internal accounts, cash and capital branch of the chief accountant's department of the Central Electricity Board, since its establishment in 1927; Mr. Long has been secretary to the Institute of Municipal Treasurers and Accountants since 1944; and Mr. Dubuis joined the Central Electricity Board in 1931 and since 1936 has been the Board's deputy chief accountant.

The South Eastern Electricity Board has announced the following further appointments: Deputy chief accountant: **Mr. F. Hardman,** A.I.M.T.A. (deputy borough treasurer, Hastings). Deputy sub-area manager, South-Western sub-area: **Mr. A. M. Harker,** M.A., F.C.C.S. (general manager and secretary, Central Sussex Electricity Group, etc.). Western Sub-area : Deputy sub-area manager, **Mr. E. J. Jarvis,** M.I.E.E. (borough electrical engineer, Kingston - upon - Thames); sub - area liaison officer, **Mr. F. Woods,** M.I.E.E. (general manager and chief engineer, Woking Electric Supply Co., Ltd.); sub-area commercial officer, **Mr. S. F. Osborne,** M.I.E.E., A.C.I.S. (district manager, London and Home Counties J.E.A.); sub-area accountant. **Mr. W. J. Richards,** A.C.C.A. (assistant finance officer. London and Home Counties J.E.A.).

The Southern Electricity Board has appointed **Mr. R. Birt,** Barrister-at-Law, B.Sc., M.I.E.E., F.C.I.S., borough electrical engineer, Ealing, as area liaison officer, and **Mr. E. L. Gethin,** B.Sc., A.M.I.E.E., as purchasing officer. The following sub-area managers have also been appointed: **Mr. C. Oldcorn,** M.I.E.E., **Lt.-Col. H. G. Fraser,** M.C., T.D., M.I.E.E., **Mr. W. G. Turner,** M.I.E.E., and **Mr. N. F. Gadsdon.**

In addition to the appointments already announced, the North Western Electricity Board has appointed **Mr. A. Heaton** (Manchester Electricity Department) as chief accountant. Mr. W. Appleyard, who we reported in our issue of 30th January as being appointed to the position, subsequently withdrew his application. The following sub-area managers have also been appointed:—Manchester: **Mr. H. G. Bell,** M.Sc.Tech, M.I.E.E. (Stretford Electricity Board). Oldham: **Mr. E. Binns,** A.M.I.E.E. (Oldham Electricity Department). Preston: **Mr. G. A. Robertson,** M.I.E.E. (Preston Electricity Department). Blackburn: **Mr. R. H. Harral,** M.I.E.E. (Blackburn Electricity Department). Stockport: **Mr. J. H. Lumsden,**

A.M.I.E.E. (Stalybridge, Hyde, Mossley and Dukinfield Transport and Electricity Board). Lakeland: **Mr. J. E. Shepherd,** M.I.E.E. (Barrow Electricity Department). Bolton: Mr. **R. C. Leslie** (Lancashire Electric Power Co.).

The following additional appointments have now been made by the Eastern Electricity Board:—Sub-area managers: **Mr. P. G. Campling,** M.I.Mech.E., M.I.E.E., chief engineer and general manager, Bedford (sub-area No. 1); **Mr. C. C. Hill,** B.Sc., M.I.E.E., assistant general manager, Northmet Power Co. (sub-area No. 2); Lt. **Col. A. E. Knights,** D.S.O., A.M.I.E.E., divisional manager, East Anglian Electric Supply Co., Ltd. (sub-area No. 4); **Mr. J. A. Sumner,** M.I.E.E., M.I.Mech.E., city electrical engineer, Norwich (sub-area No. 5). Appointments for sub-areas No. 3 and No. 6 are still to be made.

The Merseyside and North Wales Electricity Board has made the following appointments in addition to those already announced:—Secretary, **Mr. J. Rankin,** F.C.I.S. (secretary and general manager, North Wales Power Co.); chief accountant, **Mr. E. J. Lollar,** B.Comm., A.C.A. (chief accountant and director, Mersey Power Co.); sub-area liaison officer, **Mr. T. Coates,** M.Eng., M.I.E.E. (deputy city electrical engineer, Liverpool); assistant sub-area liaison officer, **Mr. J. W. Kellett** (commercial assistant, Liverpool Corporation); sub-area managers, **Mr. P. Bregazzi,** M.I.E.E. (engineer and manager, St. Helens), **Mr. N. T. Smith,** M.I.E.E. (engineer and manager, Warrington) and **Mr. C. Bollam,** A.M.I.E.E. (chief engineering adviser, North Wales Power Co.); sub-area accountant, **Mr. H. W. Povey,** A.C.I.S. (North Wales Power Co.); sub-area secretary, **Mr. W. J. Rowland,** F.C.C.S. (North Wales Power Co.).

The following sub-area managers have been appointed by the North-Eastern Electricity Board:—York: **Mr. W. A. Crocker,** A.M.I.E.E. (city electrical engineer, York); Harrogate: **Mr. A. Kelso,** M.I.E.E. (borough electrical engineer, Harrogate); Wear: **Mr. E. C. Lennox,** M.I.E.E. (North-Eastern Electric Supply Co.); Tyne: **Mr. J. F. Skipsey,** B.Sc., A.M.I.E.E. (North-Eastern Electric Supply Co.); and Tees: **Mr. F. Tillotson,** A.M.I.E.E. (borough electrical engineer, West Hartlepool). **Mr. A. H. Kenyon,** A.M.I.E.E. (North-Eastern Electric Supply Co.), has been appointed sub-area liaison officer.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication.

Responsibility cannot be accepted for correspondents' opinions.

Electrical Faults and Gas Ignition

THE experiences reported by Mr. J. C. H. Allin are a direct result of the reprehensible habit of we electrical men of depending on someone else to find us an earth for our equipment. To my mind we have no more right to interfere with the property of the water authorities than they have to push their service pipes through supply authorities' ducts to save opening up the roadway. Yet the latter practice would be far less objectionable than that of connecting all sorts of electrical apparatus to water pipes.

Now that water authorities are using insulating materials for their mains, electrical people are having to fall back on their own resources and provide separate earth conductors. This is a quite unnecessary expense as there is already a direct return for any leakage—i.e., the neutral conductor. As the Postmaster-General has agreed to multiple earthing I cannot see any valid objection to bonding and earthing to the neutral conductor provided it is equal in section to the phase conductor. Since in the case of underground cable the lead sheath forms an efficient earthing medium, this implies that isolated lengths of cable should have their sheaths bonded to the neutral of overhead sections of a distribution system.

Meanwhile, as a palliative, I suggest that all gas, water and electrical equipment and exposed earthed objects should be bonded together to ensure that no dangerous potentials shall exist between them.

Sheffield. D. H. BRAID.

REFERRING to Mr. J. C. H. Allin's letter in your issue of 20th February, the crux of the matter is contained in his statement "the gas pipe is a much better earth than the water pipe."

We have experienced somewhat comparable trouble, when we found that if a fault developed on the wiring of any house on a certain building estate, the water services of the adjacent houses became alive, the tenants receiving shocks when the water taps were touched. Investigation showed that although the water service pipe to each house and the sub-main supplying the group of houses was lead or iron, the four-inch water main was asbestos and therefore not a conductor.

On the occurrence of a wiring fault the water services of that particular group of

houses became alive, in one case to almost full mains voltage. The trouble was cured by connecting the earthing lead of each installation to the lead sheathing of the service cable instead of to the water service.

The circumstances are not unusual and are covered by Electricity Commissioners' letter ref. M.5803 of 11th November, 1947, to all undertakings.

Colchester. A. E. ANDREWS.

APPARENTLY the earth-continuity conductor to the water pipe referred to by Mr. J. C. H. Allin does not comply with I.E.E. Regulations 1005A and 1007A. I do not agree with his method of testing the earthing of the installation, as this does not indicate the effectiveness of the earth. For example, if the testing fuse were of, say, 5-A capacity, then the resistance of the installation to the general mass of earth could be up to 30 or 40 ohms to obtain the same result, i.e., the fuse would "blow," although perhaps not so spectacularly as if the earth resistance were less than one ohm.

Since the trouble experienced has been brought to notice on account of faulty flexible cables, possibly other cables require attention in this respect.

Brighton. F. J. BURRIDGE.

Peak-Load Control

TO avoid any misinterpretation being placed on Mr. Horwood's figures of relay failures per week, it should be pointed out that some types of ripple-control relays have two separate component parts for switching on and off, and that failure of one does not necessarily mean failure of the other. Because of this alone, therefore, the quoted "failures per week" figure could very well be halved.

The attainment of a 99·99 per cent reliability as against one of 99 per cent is, of course, mostly a question of how much extra one is willing to pay for the necessary variations which would lead to the higher figure.

Bedford. S. A. DAINES.

Export Prospects

IN your second article on this subject (*Electrical Review*, 13th February), you mention a product, in which we are vitally interested, electrical conduit. We ourselves, being manufacturers of the fittings only, which, up to the moment, are not restricted, and for which there is a great call in the export market, consider the convertibility factor high, but, of course, they are of little use without the conduit. However, it would appear that this country is not the only manufacturer of conduit and supplies are being obtained from Holland and America.

We feel that those countries which are so anxious to buy conduit and conduit fittings, will not wait for ever, but obtain them from other sources, losing the market to this country, and if other systems are adopted, it may well be that the consumer goods, as you put it, will not be of any use for these systems.

We hear how important any exports are, and how markets are being closed to British manufactures throughout the world, but here, we consider, is a commodity that can be readily exported more easily, if only raw materials were made available.

Liverpool, 23. H. FRENCH
(F. C. Blackwell & Co., Ltd.)

Technical Literature

IN your issue of 30th January you published a letter asking for recommendations of books dealing with the practical design of single-phase induction motors. Such information, relating to both single- and three-phase squirrel-cage machines, would, I feel sure, be of value to many of your readers.

I have found it very difficult, when asked by students and others, to name any really practical (and *reasonably* elementary) textbook, as the majority deal with the higher mathematics of design calculations and leave the beginner to flounder. This inevitably occurs just at the time the tyro is developing an interest in the subject and needs not only guidance buf every encouragement, which, I submit, is not provided by textbooks loaded with (to him at that stage of knowledge) masses of abstruse calculations. If we would help our patient to run, we must first teach him to walk, or he may, in the end, not even stagger, and we will have lost a member of our team in the race.

Maidstone. W. H. J. NORBURN, M.I.E.E.

Books Received

Refrigeration. By R. A. Collacott, B.Sc., A.M.I.Mar.E. Pp. 68; figs. 27; index. Sir Isaac Pitman & Sons, Ltd., 39, Parker Street, London, W.C.2. Price 6s.

Fundamentals of Radar. By Stephen A. Knight, F.R.S.A. Pp. 128; figs. 97; index. Sir Isaac Pitman & Sons, Ltd., 39, Parker Street, Kingsway, W.C.2. Price 10s.

Look After Your Car (Pp. 107; 65 illustrations), by the Technical Staff of *The Autocar*. Second Edition. Iliffe & Sons, Ltd., Dorset House, Stamford Street, S.E.1. Price 3s. 6d.

COMMERCE and INDUSTRY

Electricity Vesting Regulations.

FOLLOWING upon the announcement of the Minister of Fuel and Power that 1st April is to be the vesting date under the Electricity Act, 1947, the Minister has issued the Electricity (Vesting of Assets) Regulations, 1948 (S.I. 1948 No. 239) (H.M. Stationery Office, 3d.). These contain provisions as to the registration of title of Electricity Boards, as to local authorities, composite companies and non-statutory undertakings, and miscellaneous provisions.

L.C.C. Electrical Contracts

After considering representations from the Electrical Contractors' Association, the General Purposes Committee of the London County Council recommends that interim payments in respect of contracts for electrical work shall be brought into line with the arrangements for building work. That is, interim payments will be made at the rate of 90 per cent of the permanent work done throughout until completion and up to 80 per cent of the value of any unfixed materials brought to the site may be included in the interim valuations at the discretion of the superintending officer.

Shipment of a Large Transformer

A 30,000-kVA, 53/130 kV three-phase transformer, manufactured by the Hackbridge and Hewittic Electric Co., Ltd., and destined for installation in France, weighed approximately seventy tons filled with oil. When it became known that the only floating crane at the London Docks suitable for this lift was not available, there was a prospect of considerable delay and general disruption of plans for the shipment of the transformer.

The problem was solved, with the co-operation of the oil suppliers, W. B. Dick & Co., Ltd., by removing the oil from the transformer, at the maker's works immediately before dispatch, the transformer being then filled with dried air under pressure and sealed for transport. The removal of the oil brought the weight within the capacity of an available crane and after the transformer was placed in the ship's hold, it was filled with oil from W. B. Dick's oil tankers operating from the dockside.

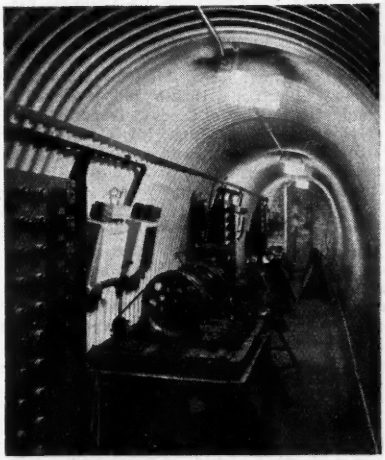
Grit Emission at Fulham

Although the economic situation has prevented the reinstatement of the gas washing plant at Fulham power station, the Council's engineers have been working on a scheme for the installation of grit arresting plant since the beginning of 1947. The outcome of negotiations with the central authorities was that orders for equipment were placed with James Howden & Co. last November. Recently, however, the Electricity Commissioners informed the Council that the Treasury had refused consent to a loan for the scheme because of the shortage of steel, and that the scheme would have to be abandoned. Representations were made through the Fulham M.P.'s to Sir Stafford Cripps who wrote stating that he fully realized the annoyance to the people of Fulham but owing to the position of the country the scheme could not be proceeded with at present. As soon as circumstances permitted progress on the scheme would be encouraged. The Electricity and Lighting Committee therefore reports that, reluctantly, it has cancelled the contract with James Howden & Co.

Fulham Contract Cancelled.

Air-Raid Shelter as Test Room

Faced with the problem of speeding up the output from the section engaged on life-testing electrical apparatus and materials, the development laboratory of the G.E.C. Witton engineering works has discovered a new use for underground air-raid shelters. As the need was urgent and the building of suitable extensions would have entailed long delay, an air-raid shelter near the laboratory has been brought into service as a test room. This is left unattended and, what is more important, the equipment is left running continuously throughout twenty-four hours without involving any increase in personnel or causing unnecessary annoyance, thus trebling output. The performance of the equipment is checked morning and night only. As can be seen from the accompanying illustration, the shelter is well



G.E.C. air-raid shelter equipped as a test room

equipped for the numerous tests which are carried out. The three switch panels shown are provided with individual G.E.C. "Elf" circuit breakers for each piece of apparatus on test.

Sulphuric Acid Price Increase

The Board of Trade has made an Order (S.I. 1948 No. 294), to come into force on 1st March, which increases by 7s. 6d. per ton the maximum selling prices of sulphuric acid. The permitted addition to the basic price of battery, accumulator or reagent acid is an amount equivalent to 50 per cent of the basic price as compared with 33⅓ per cent hitherto allowed.

E.D.A. Public Speaking Competitions

The first E.D.A. post-war speaking competitions were held last week in Leeds. There were seven female and six male candidates, drawn from electricity supply undertakings in Yorkshire and Lincolnshire. Mr. W. K. Fleming (Scarborough) presided, and the judges were Aldermen K. Chambers, J.P. (chairman of the Bradford Education Committee), Mr. E. H. Gregory (*Yorkshire Post*), and Mr. R. C. Hammersley (borough electrical engineer of Gainsborough). The prizes were awarded as follows:—Women: First, Miss N. Mawer, of Lincoln ("Electricity Health and Hygiene"); second, Miss H. Clay, of Leeds ("Trends in Post-war Housing"). Men: First, Mr. C. Druce, of Harrogate ("Electricity as an aid to Farming"); second: Mr. D. A. Cash of Bradford ("Electricity and Modern Industry").

Salford Instruments Warrington Works

The directors of Salford Electrical Instruments, Ltd., have notified 450 workers at their South Avenue works, Warrington, of a decision to transfer the bulk of their manufacturing business to Stockport. The Stockport works will be extended to absorb the greater part of the Warrington plant.

Industrial Design Competition

A competition for the design of a portable electric fire was recently sponsored by the General Electric Co., Ltd., in collaboration with "Art and Industry" in an effort to stimulate the interest of young artists in industrial design. The specification laid down included the incorporation of an existing G.E.C. reflector, two rod-type elements arranged vertically and an element guard. One switch only was to be provided and the body so designed that it could be fabricated from sheet metal pressings or stampings. There were fifty-two entrants and the drawings were assembled at Magnet House on 17th February, where they were judged by a panel consisting of Dame Caroline Haslett, Mr. G. Grey Wornum and Mr. E. E. Hoadley.

Many excellent designs were ruled out because of some fundamental fault or divergence from the specification. The entries were narrowed down until only six remained and these were judged on a percentage basis. The marks were awarded for fitness of purpose (30), mechanical soundness (20), appearance and marketability (20), originality (10), clarity of drawing (10) and precision (10). The first prize of £30 was awarded to Mr. S. W. Cox, of Ewell, Surrey, for a sheet metal fire suspended on a tubular chromium frame having a fixed metal guard. Consolation prizes of £10 were awarded to Mr. Norman Stevenson, of Macclesfield, and Mr. Kenneth Howes, of Swindon.

British Engineers' Association

The 1947-48 handbook of the British Engineers' Association has now been published and sent to members of the Association; to a carefully selected list of overseas purchasers of engineering plant; and to British commercial diplomatic officers and chambers of commerce all over the world. Included in the 660-page handbook is an alphabetical list of members with particulars of their products and overseas agencies and a classified section with headings for the immense variety of manufactures produced by members. The extensive advertising section usefully supplements the information given in the directory sections.

Sound Recording Demonstration

A demonstration of B.S.R. equipment was recently arranged by Electrical Components, Ltd., at the Grand Hotel, Birmingham. Interest centred on the latest type of direct disc recording apparatus, on which recordings were made by well known artists and dealers and their friends. The exhibition lasted two days, and was well attended. A similar demonstration is being arranged at the Grosvenor Hotel, Manchester, on 23rd and 24th March.

Contract Price Adjustment Formulæ

The British Electrical and Allied Manufacturers' Association informs us that the following are the latest figures for use in its contract price adjustment formulæ:—Rate of pay for adult male labour, 14th February, 110s. (no change). Board of Trade figure for intermediate products, 14th February, 239·7 for the month of January (against 239·2 for the month of December).

New Boiler Factory

A £100,000 factory at Renfrew bought by Babcock & Wilcox, Ltd., will concentrate on producing equipment to meet the shortage of boiler plant for power stations. The factory extends to 25,000 sq ft but there is space available for extension.

Anglo-Argentine Trade

Under the trade and financial agreement arrived at between this country and Argentina the Argentine Government undertakes to accord

most-favoured-nation treatment to British goods and to grant import permits to the extent of £10 million for United Kingdom goods hitherto subject to restrictions. An assurance has been given that there will be a substantial increase in the figure later "if the general situation permits." It has been agreed that all payments in transactions with sterling area countries shall continue to be settled in sterling.

Light-metal Alloys

The many changes that have taken place in the composition of light-metal alloys and their designations enhance the usefulness of the latest edition of the "Noral" reference booklet entitled "Specifications for Aluminium and Aluminium Alloy Products," which has been reissued and revised several times since it was first compiled seven years ago by the Northern Aluminium Co., Ltd., Banbury, Oxon. An index to specifications occupies ten pages and another of proprietary names fills fifteen pages while tabulated data on composition and mechanical properties occupy the remaining 48 pages.

Stock Control

The importance of stock control in works and factories is such that a guide to organizing an accurate and efficient system will be welcomed. The Purchasing Officers' Association, 17-18, Henrietta Street, London. W.C.2, has published "Stock Control" by W. Gildon, in which the author describes, with specimen forms, a system which has been proved. The booklet is obtainable from the Association at 2s. post free.

Trade Publications

Metropolitan-Vickers Electrical Co., Ltd., 1, Kingsway, London, W.C.2. — Technical brochure (SP. 7108/1-1) illustrating types of infra-red equipment for different kinds of industrial drying.

M.K. Electric, Ltd., Wakefield Street, Edmonton, London, N.18.—Priced folder (No. 200) illustrating 13-A socket outlet with fused plug head, rectangular pins and anti-flash shutters.

Ferranti, Ltd., Hollinwood, Lancs.—Two technical leaflets on a pocket light-meter and a 7-range clip-on ammeter.

B.E.N. Patents, Ltd., High Wycombe, Bucks.—Leaflet illustrating the range of B.E.N., pneumatic agricultural equipment.

Delco-Remy-Hyatt, 111, Grosvenor Road, London, S.W.1.—Priced leaflet illustrating 8- and 10-in. exhaust fans for d.c. working.

E.M.I. Sales & Service, Ltd., Sheraton Works, Hayes, Middx.—Illustrated leaflet describing the H.M.V. iron stand.

The Acru Tool Mfg. Co., Ltd., 123, Hyde Road, Ardwick, Manchester 12.—Priced leaflet on the "Acru 24" detachable-bit soldering iron.

Simplex Electric Co., Ltd., Broadwell, Oldbury, Birmingham.—Two priced leaflets:—L1747, on the "Adjustalite" low-voltage adjustable bracket light for general industrial use and L1745, on flameproof well-glass lighting fittings and accessories.

British Thomson-Houston Co., Ltd., Crown House, Aldwych, London, W.C.2.—Priced folder (L827/M) on reflector lamps for infra-red drying ovens; also two- or four-lamp bus-bar assemblies.

Venner Time Switches, Ltd., New Malden, Surrey.—Priced leaflet (T.S.19) on a solar dial time switch for 10-A circuits.

Apis Engineering and Research, Ltd., 77, Willow Way, Sydenham, London, S.E.26. — Technical leaflet on electronic liquid dispenser for laboratories where small volumes of liquid must be dispensed at high speed.

Italy's Electrical Trade

Italy's imports and exports of electrical goods in 1946 are summarized in the accompanying table. It will be seen that her exports are between four and five times the value of her imports. They are spread over a number of different markets, with Argentina a particularly good customer.

	Imports Lire (000)	Exports Lire (000)
Generators and motors without commutators	15,204	36,500
From Sweden	5,800	—
„ *Switzerland*	8,700	—
To Argentina	—	11,360
„ *Brazil*	—	13,240
Ditto, with commutators	10,000	53,000
From Sweden	5,150	—
„ *Switzerland*	3,600	—
To Argentina	—	20,620
„ *Brazil*	—	13,700
Transformers, static	6,600	2,340
From Germany	6,000	—
To Germany	—	1,200
Unspecified elec. apparatus	19,380	113,500
From Holland	1,300	—
„ *Sweden*	1,100	—
„ *Switzerland*	16,000	—
To Turkey	—	29,000
„ *Palestine*	—	10,700
„ *Argentina*	—	10,000
„ *Egypt*	—	8,000

Reports on German Industry

The latest reports on German industry include the following:—B.I.O.S. 1692, "Mercury Arc Rectifier Practice in Germany" (4s.), and B.I.O.S. Misc. 59, "Hydrodynamic Research in Germany" (2s.). Copies can be obtained from H.M. Stationery Office.

Trade Announcements

The Simplex Electric Co., Ltd., is opening on 1st March new offices and stores serving the counties of Leicestershire, Northamptonshire and Rutland, at 7, Millstone Lane, Leicester, (telephone: 22587; telegrams: "Simplex"), in charge of Mr. A. Hosken.

Tool & Electrical Distributors, Ltd., has disposed of the tool side of its business to its associate company, Philpott & Cowlin, Ltd.,

and will concentrate solely on the wholesale factoring of electrical equipment and supplies. Consequent upon this change of policy the name of the company has been changed to T.D.L. Electrical Distributors, Ltd. The sales manager is Mr. L. G. Hooper, formerly with Christy Bros. & Co., Ltd., and the North Somerset Electric Supply Co., Ltd.

Mr. L. H. Story, who has been with **S. O. Bowker, Ltd.,** for fifteen years, will be leaving that company on 1st March, to join **T.M.C.-Harwell (Sales), Ltd.,** as representative for London and South England. The office of S. O. Bowker, Ltd., 58, Riefield Road, S.E.9, will be closed from that date, and all communications to the company should be sent direct to 19-21, Warstone Lane, Birmingham, 18, until further notice.

Brimley & Co. (Birkenhead), Ltd., are opening new premises at 11, Liver Street, Liverpool, (telephone: Royal 6420). It will act as a branch warehouse to the company's existing premises at 184, Cleveland Street, Birkenhead.

The London and Home Countries territory of **Berry's Electric, Ltd.,** has been placed in the hands of Mr. J. Callingham (south of the Thames) and Mr. L. C. Reeves (north of the river).

The Concordia Electric Wire & Cable Co., Ltd., announces that its Cardiff branch office is now at 20, David Street, Cardiff.

Irish Import Trade

There was a very substantial rise in the value of imports into Eire last year, the total reaching £131 million (United Kingdom £54 million) as compared with the 1946 figure of £72 million (United Kingdom £38 million). Purchases of machinery and electrical goods and apparatus rose in value from £5·0 to £8·8 million.

Kidderminster Company's New Factory

It is reported that Pike Mills, Kidderminster, has been leased to B. French, Ltd. for fourteen years.

Installation and Maintenance

A DRAFT Code of Practice, Code 321, 102, prepared by a Committee convened by the Institution of Electrical Engineers on behalf of the Codes of Practice Committee, deals with the "Installation and Maintenance of Electrical Machines, Transformers, Rectifiers, Capacitors and Associated Equipment" operating at 650 V or less and installed on the consumer's side of the electricity supply intake. Materials, appliances and components are listed, with the corresponding British Standards.

Information is given on the safeguarding of apparatus and circuits against fire, explosion and damage from dusty, damp or corrosive atmospheres; on the protection of motors and circuits against excess current; and on starting currents, grouping of fractional horse-power motors and protection and control of capacitor circuits. Recommendations are made as to starting, stopping and adjustment during running of various types of motors. Other matters dealt with include siting and erection of apparatus, requirements for the inspection and testing of installations, and advice on maintenance, protection of exposed surfaces, earthing and safety arrangements, and the most suitable types and sizes of cables for motors working under various conditions.

The code is subject to amendment in the light of comments received not later than 1st April. Copies, reference C.P.(B) 718, may be obtained from British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. post free.

Trade Marks

THE following applications have been made for the registration of trade marks. Objections may be entered within a month from 18th February:—

ROGERAIL. No. B648,151, Class 7. Dynamos, electric motors, etc., none being engines or motors for land vehicles; and parts included in Class 7.—F. C. Rogers, 27, Sion Court, Twickenham, Middlesex.

SOLDER-MATIC. No. 652,350, Class 9. Electric soldering irons.—C. A. Pinkham & W. Coates, trading as Nelpin Mfg. Co., New York. Address for service: c/o C. Lockett Hughes, 46, Bedford Row, W.C.1.

THORN. No. 652,366, Class 9. Radio and television apparatus, gramophones and cinematograph apparatus, and parts, included in Class 9, of all such goods; electric switches and vacuum cleaners. No. 652,367, Class 11. Electrical apparatus for drying, refrigerating, heating and lighting.—Thorn Electrical Industries, Ltd., 107-109, Judd Street, W.C.1.

DENCO (design). No. 655,466, Class 9. Wireless receiving and transmitting apparatus.—Denco (Clacton), Ltd., 355-359, Old Road, Clacton-on-Sea.

UVITRON and BIOSOL. Nos. 654,355-6 respectively. Electro-medical apparatus.—Solomon Schaffer, 9, Charlton Drive, N.2.

CONDOR. No. 648,193, Class 11. Installations for lighting, electric lamps and lighting fittings included in Class 11.—Stella Lamp Co., Ltd., Winchelsea Road, Harlesden, N.W.10.

DULEC and design. Nos. 651,836-1 respectively. Water heating apparatus.—Dulec, Ltd., 6, Old Jewry, E.C.2.

JENOHM. No. 655,977, Class 17. Insulating varnishes.—Jenson & Nicholson, Ltd., Jenson House, Carpenters Road, Stratford, E.15.

THESSCONITE. No. 655,543/7767S, Class 9. (Application made to the Cutlers' Company). Electrodes for electric welding and contacts (electrical) produced from metals and their alloys by the processes of powder metallurgy.—Sheffield Smelting Co., Ltd., Royds Mill Street, Sheffield, 4.

Overseas Electrical Trade

January Exports Reach Record Level

ALTHOUGH December's electrical exports, at £7,389,127, created a new record, this was surpassed in January when a total of £8,180,264 was reached, comparing with £5,439,144 in January last year and a monthly average of £1,829,198 in 1938.

Many classes contributed to this extraordinary increase. Cable exports, as a whole, were valued at £1,581,601 against £925,205 in January, 1947. Principal destinations for non-submarine telegraph and telephone cables were South Africa (£94,181), Argentina (£43,193) and Sweden (£42,823). India, Pakistan and other Indian states imported rubber-insulated cables to the value of £81,928; other large customers

Table I.—Electrical Exports and Imports

Class	Exports			Imports		
	Jan., 1948	Jan., 1947	Monthly Av., 1938	Jan., 1948	Jan., 1947	Monthly Av., 1948
	£	£	£	£	£	£
Telegraph and telephone wires and cables (submarine)	73,489	19,208	17,289			
Ditto, not submarine	422,174	161,663	71,803			
Wires and cables, rubber insulated	450,695	384,821	117,533			
Ditto, cotton, silk or artificial silk insulated	48,877	39,849	†	18,740	2,774	31,246
Ditto, enamel, glass or asbestos insulated	23,644	19,583	†			
Ditto, paper insulated	468,925	259,663	103,457			
Ditto, other	93,797	40,418	49,799			
Commercial radio apparatus	228,285	122,731	28,296	12,254	14,607	58,018
Domestic radio apparatus	457,214	429,144	36,755			
Telegraph, telephone and signalling apparatus	749,576	488,776	242,716	2,228	4,446	9,243
Other radio, etc., apparatus	306,077	174,750	57,848	—	—	—
Radio valves	158,560	111,973	41,272	30,249	13,449	10,893
Electric carbons, furnace	*	*	*	38,698	31,317	4,054
Ditto, other	*	*	*	5,508	2,043	2,301
Electric lamps, not exceeding 24 V	17,018	17,883				
Discharge lamps	33,508	7,389	49,440	7,469	1,116	10,265
Other lamps	89,862	83,492				
Other lighting apparatus	447,618	233,323	48,565	9,759	9,475	38,662
Primary batteries	34,146	35,123	13,572	*	*	*
Accumulators for motor vehicles	176,361	119,511	16,418	*	*	*
Ditto, traction	1,664					
Ditto, radio	926	31,183	12,456	*	*	*
Other portable accumulators	28,708					
All other accumulators	38,884	29,687	19,773	*	*	*
Parts and accessories	59,735	81,346	—	*	*	*
Cooking apparatus and elements	115,451	62,214	16,600	*	*	*
Heating apparatus and elements	85,228	158,322	14,064	*	*	*
Other parts and accessories	39,026	13,127	—	*	*	*
Commercial electrical instruments	89,671	95,304	15,878			
House service meters	225,026	62,910	15,791	14,070	13,544	32,057
Other electrical instruments	52,832	27,030	9,612			
Electro-medical apparatus (not X-ray)	25,673	15,640	3,038	*	*	*
X-ray apparatus, tubes and parts	64,835	91,541	4,881	40,760	16,422	9,734
Insulating cloth and tape	48,913	32,316	7,038	*	*	*
Other insulating materials	112,134	68,727	12,305	*	*	*
Unclassified goods and apparatus	438,184	161,621	108,085	42,211	8,481	56,529
Generators, up to 200 kW	235,409	105,091	38,071	*	*	*
Ditto, over 200 kW	211,647	402,212	119,079	*	*	*
Ditto, parts	229,174	36,819	—	*	*	*
Motors, railway and tramway	6,030	20,217	15,977			
Ditto, other, up to ½ h.p.	74,290	43,904	9,001			
Ditto, from ½ to 1 h.p.	61,534	15,213	2,470	43,806	8,409	26,033
Ditto, from 1 to 250 h.p.	332,670	198,959	96,637			
Ditto, over 250 h.p.	40,490	20,298	20,960			
Ditto, parts	40,205	43,151	—			
Converting machinery	31,189	25,160	101,304			
Transformers, including coils	318,854	279,865				
Rectifiers for power house use	22,537	9,170	3,463	128,823	3,184	14,455
Motor starting and controlling gear	137,615	68,200	50,866			
Switchgear and switchboards (not telegraph or telephone)	531,523	331,545	184,533			
Other electrical machinery	50,322	15,921	15,497			
Vacuum cleaners and parts	98,899	116,964	26,662	59,672	2,209	24,627
Other electrically operated portable appliances	51,160	26,187	10,394			
Total	8,180,264	5,439,144	1,829,198	454,247	131,476	328,117

* Not classified separately. † Not separately distinguished in 1938.

for these were South Africa (£66,788), New Zealand (£42,704) and Eire (£25,141). Cables with other insulation were taken by South Africa (£113,477), Australia (£104,405), India, Pakistan, etc. (£87,963), New Zealand (£39,655), and Sweden (£22,726).

Exports of domestic radio sets were not much higher than in January, 1947, but their value was over twelve times the 1938 monthly average. The largest share was taken by India, Pakistan, etc. (£136,104); Belgium (£31,433), Egypt (£34,228), South Africa (£24,482) and Brazil (£21,624) were other substantial customers. As regards telegraph and telephone equipment, which made a very marked advance, South Africa (£133,357) was the leading importer followed by Australia (£74,449), New Zealand (£73,158), India, Pakistan, etc. (£55,420) and Argentina (£42,416).

Table II.—Distribution of Exports of Electrical Goods and Apparatus

Destination	Jan., 1948	Jan., 1947	Monthly Av., 1938
	£	£	£
Eire	302,103	107,689	37,726
Channel Islands	46,526	32,597	12,177
Malta and Gozo	15,678	19,968	5,873
Cyprus	15,227	5,627	1,373
Palestine	96,357	87,015	8,426
British West Africa	87,244	37,170	12,889
Union of South Africa	687,768	528,758	162,584
Southern Rhodesia	43,076	38,283	9,632
British East Africa	127,406	24,209	7,893
India, Pakistan, etc.	817,935	558,398	123,789
British Malaya	139,832	92,414	32,792
Ceylon	42,127	29,551	15,048
Hong Kong	55,060	36,725	12,939
Australia	367,639	162,702	197,366
New Zealand	313,815	135,093	96,225
Canada	88,869	32,643	12,547
British West Indies	54,575	24,764	12,954
Anglo-Egyptian Sudan	10,937	2,506	2,989
Other British Countries	101,496	51,874	11,030
Soviet Union	8,033	123,573	36,781
Finland	26,364	16,409	5,969
Sweden	219,785	100,759	14,948
Norway	170,870	154,353	12,881
Iceland	12,517	21,929	2,796
Denmark	40,224	103,666	18,907
Poland	13,138	38,737	9,702
Netherlands	117,380	101,936	22,010
Belgium	158,410	79,499	11,208
France	76,348	19,713	16,082
Switzerland	51,983	38,890	3,768
Portugal	60,345	54,111	6,512
Spain	8,896	24,476	3,813
Czechoslovakia	25,866	11,503	7,205
Jugoslavia	1,171	60,452	1,475
Greece	56,709	15,654	4,926
Turkey	194,657	34,619	7,684
Dutch East Indies	25,198	6,501	2,692
Dutch West Indies	11,399	8,035	830
Portuguese East Africa	28,897	5,936	6,942
Lebanon	20,014	9,681	—
Egypt	125,090	74,089	13,176
Iraq	95,098	68,390	5,530
Iran	74,403	129,024	16,345
Burma	34,548	32,747	5,337
China	117,870	35,149	4,116
United States	12,238	2,937	5,839
Mexico	2,623	2,355	1,466
Colombia	6,384	8,567	845
Venezuela	48,632	34,638	2,936
Chile	12,258	30,232	6,635
Brazil	119,662	30,314	11,164
Uruguay	48,052	11,576	1,790
Argentina	163,001	102,581	45,452
Other Foreign Countries	104,983	79,251	40,270
Total	5,706,716	3,680,268	1,134,284

In the lighting equipment class India, Pakistan and South Africa held leading positions as importers. India, Pakistan, etc., were also the main customers for accumulators (£61,802), South Africa (£26,581) being second. Exports of electric cooking and heating apparatus (including industrial) were taken mainly by Australia (£41,293), South Africa (£32,327) and Eire (£31,753).

India, Pakistan, etc., headed the list of importers of electrical instruments (£144,795), South Africa (£27,807) and New Zealand (£26,740) being well behind.

From Table II it will be seen that India, Pakistan, etc., were by far the biggest customers for British electrical goods and apparatus, their share having risen from £558,398 to £817,935. South Africa, the second largest customer, increased its purchases from £528,758 to £687,768. Some way behind followed Australia (£367,639), New Zealand (£313,815) and Eire (£302,103). It is of particular interest to see that among foreign countries Sweden (a " hard currency " state) was the principal customer (£219,785).

With regard to electrical machinery and heavy equipment, it is noteworthy that while exports of generators under 200 kW rose in value from £105,091 to £235,409, larger machines fell from £402,212 to £211,647; there was a remarkable rise in exports of generator parts—from £36,819 to £229,174. Australia's purchase of generators amounted to £248,479 (it was only £9,721 in January, 1947). India, Pakistan, etc., were credited with £77,472 and Burma with £43,932.

With the exception of traction motors, there was a substantial increase in motor exports about 60 per cent of which were between 1 and 250 h.p. There was a much bigger proportional advance in shipments of fractional-h.p. machines. The share of India, Pakistan, etc., showed a substantial rise (from £41,442 to £124,808); South Africa (£73,148) and Norway (£31,081) were important buyers. India, Pakistan, etc., and South Africa were also the principal importers of other machinery and equipment.

Imports in January were substantially higher than in the corresponding month of last year; most of them came from Canada and the United States.

PARLIAMENTARY NEWS

By Our Special Reporter

IN the House of Commons last week Mr. Teeling asked the Minister of Works why the South Eastern Electricity Board was being allowed to take over the Princes Hotel, Hove; how much was being paid for it; how much would be spent on re-equipment; how many bedrooms the hotel had before the war; how many flats could have been made out of it; and why it had not been requisitioned for housing.

Mr. Key said that his Ministry had no jurisdiction over the British Electricity Authority and that he could not give the information sought. He understood, however, that the building was not considered suitable for housing purposes.

Power Station Emissions

The Minister of Fuel and Power assured Mr. Keeling that in all new coal-burning power stations the most modern methods would be used, where necessary, to prevent pollution of the air by emission from the chimneys and by dust from the coal unloaded.

Public Board Salaries

Mr. Ivor Thomas asked the Chancellor of the Exchequer whether he would lay down a standard maximum salary of £5,000 a year for full-time service with a nationalized industry, whether on the board or in an executive post, and take steps to ensure that salaries in excess of this would be reduced by agreement or otherwise as opportunity permitted.

Sir Stafford Cripps said that the salaries of chairman and members of public boards were fixed at the level necessary to obtain men with the qualifications and experience required for these highly responsible posts, having regard to the salaries obtainable for similar posts in the field of private enterprise. He did not think a specific limit would be practicable.

At the request of Mr. Erroll the Prime Minister last week provided a statement showing the salaries and allowances of the members of all the boards of socialized undertakings. In this it is shown that the salaries of members of the British Electricity Authority are as follows:—Lord Citrine (chairman), £8,500; Sir Henry Self and Mr. J. Hacking (deputy chairman), £5,000; Mr. E. W. Bussey (full-time member), £3,500; and Dame Caroline Haslett, Alderman Sir William Walker and Lt. Col. E. H. E. Woodward (part-time members), £1,000. The chairman of the North of Scotland Hydro-Electric Board is an unpaid member and four other members receive salaries as chairmen of Area Electricity Boards. An allowance of £2,500 is to be allocated among members of the Authority. The statement also shows that the salary of an Area Board chairman is £4,000, that of a deputy-chairman £3,500 and that of part-time members £750. There is a total allowance of not more than £1,500 for each Board.

Salaries of the board of Cable & Wireless, Ltd., are as follows:—Sir Stanley Angwin (chairman), £2,500, with an allowance of £350; Mr. J. Innes (managing director), £5,000 (allowance £350); Maj. Gen. L. B. Nicholls (full-time director), £1,750; Messrs. C. N. Gallie and A. Black (part-time directors), £750.

Mr. T. Johnston, as chairman of the North of Scotland Board, is unpaid but has an allowance of £200; Mr. A. E. McColl (deputy chairman) is paid £3,000; Mr. Neil Beaton and Sir Hugh Mackenzie (part-time members) receive £500; and Mr. W. K. Whigham (another part-time member) is unpaid.

Local Government Bill

IN the Local Government Bill which passed its third reading in the House of Commons this week, provision is made (in Part V) with regard to the rates payable by the British Electricity Authority, the North of Scotland Hydro-Electric Board and the British Transport Commission.

The undertakings controlled by these bodies will no longer pay rates individually. Instead lump sums will be paid and distributed to rating authorities in proportion to rateable value. In the case of the British Electricity Authority a "standard amount" of £11,250,000 is to be distributed to authorities in England and Wales in 1948-49; this represents the total payment made by electricity undertakings in 1947-48. The standard amount will be adjusted in subsequent years in accordance with changes in the average rates levied and in sales of electricity. Similar arrangements apply to Scotland and the area of the North of Scotland Hydro-Electric Board is separately treated.

It is provided in Section 96 that the British Electricity Authority may require Area Electricity Boards to contribute towards the payments to be made under the Bill.

The Minister of Health and the Secretary of State for Scotland are given power to vary the amounts payable by the B.E.A. and other public bodies concerned.

During the report stage of the Bill, on Clause 100 (Temporary grants by county councils to county district councils, parish councils, etc., in certain cases), Mr. Elliot moved an amendment providing that county councils should make grants for a total of fifteen years, instead of ten

years as proposed in the Bill, to local authorities who would lose the rateable value of railway, or canal hereditaments or premises occupied by the British Electricity Authority. He said that the taking of railway and electrical hereditaments out of the rating lists was at least as big a change for the authorities affected as de-rating had been.

Mr. Bevan, Minister of Health, said that the time in the original Bill was five years and he had agreed to make it ten. Mr. Elliot was trying to push him further. That was quite unreasonable. In the past because a local authority had a power station in its area its own rateable value was inflated. These authorities had been lavishly treated for years and they were now expected to undertake exactly the same responsibility as others took. The Government considered that it had made generous provision which the local authorities concerned had accepted willingly.

Mr. J. Edwards, Parliamentary Secretary, Ministry of Health, resisting the amendment, said that the Government decided, as a matter of principle, that the monies that were to be paid into the pool covering the amount formerly paid in rates should be distributed over the country in accordance with rateable value. At first five years were to be given to the local authorities affected to turn round, but later the Government came to the conclusion that the period should be doubled. By another clause of the Bill a county council could come to the aid of a local authority which could not adjust its position within the period.

The amendment was negatived.

"Indirectly Productive" Parts

Sir J. Mellor moved a new clause providing that appropriate assessments should be created in any valuation list in respect of such portions of electricity undertakings as were only indirectly productive, and the sum total of contributions in lieu of rates accruing in favour of rating authorities upon such assessments should be deducted from the payments to be made year by year by the British Electricity Authority. He said that the amount paid by the Electricity Authority into the pool should be diminished by the total amount paid in rates. Under the Government's present proposals whereby power stations were to be entirely eliminated from valuation lists, great hardship would be inflicted on those local authorities which had power stations in their areas. Why were only electricity undertakings being dealt with in that way?

Mr. Bevan said that what the clause did was to try to leave for local rating those parts of the electricity undertaking that could be described as not being directly related to the production of electricity. He was informed that "indirectly productive" was almost impossible to construe.

The proposed clause was rejected.

Electrical Fair Trading

IN its report for the past year, the Electrical Fair Trading Council refers to the appointment of Mr. A. S. Lowe as secretary in succession to Mr. Felix Rogers who was compelled to retire from the position by reason of pressure of other work.

One matter which the Council has prominently before it is the implication of the repeal of Section 48 of the 1926 Electricity (Supply) Act by the 1947 Act. The Council stresses the voluntary nature of the Fair Trading Policy (a fourth edition of which is in hand) and it is claimed that the Policy provides a fair and reasonable acknowledgment of the degree of service rendered to the industry by each class of buyer concerned. It is claimed that considerable benefit, in the way of orderly trading, has been derived from its introduction.

The Council intends, by future propaganda and publicity, to keep its aims and objects continuously before the people of the industry from the manager to the salesman.

Among its other activities during the year the Council mentions a written report on the Fair Trading Policy presented to the Simon Committee which is examining the organization and methods of distribution of building materials and components.

Mr. V. Watlington has again been elected independent chairman of the Council and Mr. T. W. Heather vice-chairman for the current year.

I.E.E. Homes Fund

THE Homes Fund, which was instituted during the presidency of Sir Harry Railing as a living war memorial to those members of the Institution of Electrical Engineers who lost their lives during the recent war, has made steady progress and nearly half the amount required for the building of the first residential estate which will house beneficiaries in pleasant surroundings, has been reached. The fund has benefited recently from generous donations from three supply companies and three municipal supply organizations, and the Court of Governors hopes that before the vesting day further contributions, which are permissible under Clause 29 (1), Proviso (ii), of the Electricity Act, 1947, will be received.

Radio Servicing at Stockton-on-Tees

THE Chamber of Trade has protested against the Stockton-on-Tees Town Council's recent introduction of municipal servicing of wireless sets. The president Mr. T. G. Slater, commenting on the Council's refusal to receive a deputation from local wireless dealers, said that they would not know whether the new department was showing a loss or profit. If it showed a loss, it would presumably be recovered from other departments of the Corporation.

ELECTRICITY SUPPLY

Domestic Charges at Sheffield. Hornsey Project Postponed.

Bristol.—DISTRIBUTION PLANS.—A report submitted by the Electricity Committee foreshadows the construction of more than sixty substations in various parts of the area. Provisional agreement has been reached with the Housing Committee to appropriate 54 plots for this purpose and additional sites will be taken over from other Corporation Committees, including one at Filton for a 33-kV distribution centre. Owing to the growth of load in the St. Paul's and Cairns Road district the 6·6-kV feeders are becoming overloaded and it is proposed to undertake works costing £88,000 in this connection.

ASH DUMP.—Recommending the construction of an access road to land at Portishead acquired for use as an ash dump for the power station, the Electricity Committee says that it will result in economy in the cost of ash disposal. The cost of the road is estimated at £5,800.

Burntisland.—HOUSE INSTALLATIONS.—A resolution was passed at a recent meeting of the Council that specifications should be prepared and tenders obtained for the installation of electricity in those houses in Rossend Avenue and Dick Crescent still lighted by gas.

Colwyn Bay.—PROPOSED REBATE.—The Town Council is applying to the Ministry of Fuel and Power for a licence to grant a rebate to consumers equivalent to a 50 per cent reduction in charges as between January and March. This rebate would be given from a refund of £15,534 obtained from the North Wales Power Co., the result of negotiations going back as far as 1939. The undertaking has a reserve fund of £300,000, which is £5,000 more than the usual 10 per cent on capital expenditure allowed as reserve.

Darlington.—EXTENSIONS.—Application has been made by the Town Council for sanction to borrow £19,788 for the installation of new feeder cables, switchgear, etc., at the generating station and for the laying of h.v. cables from the generating station to Yarm Road and from the substation along McMullen Road to the new factory of Paton & Baldwin, Ltd. Mains are to be extended in Uplands Road and Valley Street.

GAS WORKS INSTALLATION.—Improvements to the electrical installation at the Corporation gas works will include new h.v. cable, transformers and rewiring work. The work will be done in sections the first of which will cost £2,400.

Exeter.—SUPPLY TO INDUSTRIAL ESTATE.—Application is being made for sanction to borrow £850 to provide a substation building in connection with the supply of electricity to the first portion of the development scheme on the Marsh Barton industrial estate.

Hornsey. — PUMPING PLANT. — Application is to be made to the Electricity Commissioners for consent to borrow £7,735 for electrification of a Metropolitan Water Board pumping station at Woodside Avenue, N. The plant will have a maximum demand of 400 kW and the annual consumption will be approximately 2·5 million kWh.

SCHEME DEFERRED.—In response to a request from the chairman of the Eastern Electricity Board, Hornsey Electricity Department has agreed to postpone a redevelopment scheme at the electricity works in order that the necessity for the plan can be considered in the light of the requirements of the sub-area.

Maidstone.—EXTENSIONS.—The Corporation has approved the provision of electricity to Preston Hall Farm (£400), " Morning Dawn " and Marshall's Farm, Hollingbourne (£1,835), Mount Pleasant Farm, Chart Sutton (£440) and a.c. extensions to Penenden Street (£160).

NEW SUBSTATION. — Sanction has been received to borrow £22,450 for a new substation to provide a.c. to the town centre.

Middlesex.—ELECTRIC PUMPING PLANT. —The County Council is arranging with the Egham & Staines Electricity Co. for the provision of a supply of electricity to a new pumping station at Perry Oaks works, necessitated by the extensions of London Airport, subject to the cost (estimated at £1,646) being borne by the Ministry of Civil Aviation.

North Scotland —TRANSMISSION LINES.—The Electricity Commissioners have approved Constructional Scheme No. 21 (Shira-Inveruglas transmission lines) prepared by the North of Scotland Hydro-Electric Board.

Perth.—CHANGE-OVER SCHEME.—The North of Scotland Hydro-Electric Board has approved the suggestion that Perth Town Council should apply for authority to spend £153,285 on the first stage of the change-over from d.c. to a.c. in the city. The complete scheme is estimated to cost £350,000.

Reading.—SCHOOL LIGHTING.—A programme adopted by the Education Committee for converting the lighting of schools from gas to electricity provides for two schools to be dealt with each year. ' Owing to the difficulty of obtaining the necessary authority and permits for the supply of materials the programme has been retarded, and the Committee recommends that everything possible should be done to bring it up to date, and to ensure the provision of electric lighting in the Redlands Secondary School.

Rochdale. — HOUSING DEVELOPMENT. — The Electricity Committee is applying to the Electricity Commissioners for consent to a loan of

£62,003 for substations, plant and equipment, mains and services for an electricity supply to Kirkholt housing estate.

Sheffield.—HIGHER DOMESTIC CHARGES.—Increases in domestic electricity charges to come into operation on 1st April have been recommended by the Electricity Committee. Under the two-part tariff the fixed charge will be 10 per cent instead of 8½ per cent of the rateable value per annum and the "unit" rate will be raised from 0·45d. to 0·6d. Other charges will also be increased and altogether the revisions are estimated to produce an additional revenue of £434,000 a year.

Stirling.—CHANGE-OVER SCHEME.—A report submitted to the Town Council estimates that the conversion of the town's electricity supply from d.c. to a.c. and the provision of new plant will cost £45,650 and take five years. Subject to the approval of the South-East Scotland Electricity Board, application is to be made for approval of capital expenditure of £5,270 on the purchase of switchgear and transformers.

Sunderland.—STREET LIGHTING PROPOSALS.—A £115,000 scheme for replanning the street lighting is being considered by the Town Council. It is proposed to transfer the responsibility for street lighting from the Electricity Committee to the Highways Committee.

Wallasey.—POWER STATION EXTENSIONS.—The Corporation has received instructions from the Central Electricity Board to proceed with the purchase of land for extensions to the Poulton power station. The extensions are estimated to cost £3,000,000.

Wokingham.—SODIUM LIGHTING.—Subject to the consent of the Ministry of Transport the Council is to proceed with a scheme of sodium street lighting on the main Reading-Ascot road.

Overseas

Denmark. — POWER FROM NORWAY. — The Danish Government is preparing plans to use Norwegian electric power, and the Ministry of Public Works has appointed a committee which is to set up a company to deal with the economic aspect of the proposal. The plan involves an estimated establishment cost of about Kr. 60,000,000 and an annual operating expense of about Kr. 13,000,000. The plan provides for the delivery of electricity in Denmark at 2 ore (roughly one farthing) per kWh by 1954.

Eire.—RURAL ELECTRIFICATION.—The first stage of the Electricity Supply Board's rural electrification scheme in Co. Cork was completed recently when a supply was switched on to the first 100 houses west of Cork. Eventually the scheme will embrace 32 sq miles (83 sq km) of the Inniscarra rural area.

France.—FINANCES UNDER NATIONALIZATION.—M. Etienne Audibert, president of the French Electricity Organization, stated last week that the nationalized electricity industry in France showed a credit balance of 3,000 million francs in the first eight months of 1947.

India.—OBJECTIONS TO ELECTRICITY BILL.—In a memorandum to the Minister for Works, Mines and Power, the Federation of Electricity Undertakings of India expresses its objections to the Electricity (Supply) Bill. This measure, the Federation asserts, is unnecessarily complex and in seeking to standardize expenses, rates, depreciation and return on capital an attempt is made to do the impossible. If the object is to benefit consumers, there is a serious omission in that the Bill fails to regulate Provincial Governments' tax on electricity which, in some cases, is as high as 62 per cent. An objectionable feature of the Bill, states the Federation, is that relating to the purchase price for any generating station or main transmission line acquired by the proposed Provincial Electricity Boards.

TRANSPORT

Canada.—MORE TROLLEY-COACH ROUTES.—Operation of trolley-coaches at Fort William and Port Arthur was inaugurated recently. Eighteen vehicles are in use. At Winnipeg, since 1938 seven motor-bus and street-car services have been replaced by trolley-vehicles, of which the Winnipeg Electric Co. now operates a fleet of seventy. A third trolley-vehicle route was recently opened in Toronto and further conversions are planned; the fleet of vehicles numbers seventy-five. The Montreal Tramways Co. has added seventeen new trolley-coaches to its service. Thirty trolley-vehicles are ready for operating a B.C. Electric route in Vancouver, with twelve more expected shortly. Altogether, ninety-two will be needed for the routes planned in that city.

Glasgow.—TROLLEY-BUS SCHEME CURTAILED.—Development of the Corporation trolley-bus service is to be curtailed because of the capital expenditure involved. The Transport Committee has been asked by the Ministry of Transport to postpone the proposed extension of the trolley-bus route from Shawfield to Rutherglen. Progress is being made on the route originally proposed between Provanmill and Polmadie.

Newcastle-on-Tyne.—HIGHER FARES PROPOSED.—On the recommendation of the Transport and Electricity Committee, the City Council has applied for sanction to increase fares; they have not been altered for twenty-seven years. There will be an increase of ½d. on all fares up to and including 2½d. There will also be a revision of workmen's and children's fares. The halfpenny fare in the central zone will be increased to a penny. The transport undertaking is faced with a loss of £53,244 for the current year and for 1948-49 the loss is estimated at £228,467. The fare increases are expected to bring in £230,000.

FINANCIAL SECTION

Company News. Stock Exchange Activities.

Reports and Dividends

English Electric Co., Ltd.—At the annual meeting on 18th February Sir George Nelson (chairman) said that the stoppage through the coal shortage and the delay in completing the necessary changes from the production of war materials to the requirements of peace had made the year under review a difficult one. The company had finished 1947 with an order book still greater in volume, but spread over several years ahead without the load on any one year being beyond the capacity of their manufacturing facilities.

They had completed the extension of their important research laboratories at Stafford. An important section had been added to deal with the problems of atomic and nuclear energy and the application of the results of such research to the benefit of man. The first main line diesel-electric locomotive to run in this country was put into operation on the L.M.S. line in December. The diesel engine and electrical equipment were designed by the E.E. Co.'s experts and built at the company's works, and the design and manufacture of the mechanical parts were undertaken by the Railway Co. The whole was completed from drawing board to operation in seven months.

Referring to the unbalanced production of the country generally, Sir George said that so far as they were concerned there had been little or no improvement since the previous year. Labour turnover during the year had been abnormal, and this had arisen from lack of houses, difficulties in transport, etc. The company had endeavoured to combat the shortage by moving a great volume of work to areas in which labour was available, and by a house-building programme. They had not taken orders in excess of the capacity of their plant, the volume of materials promised or the labour they understood would be available through the ordinary channels. The plant was not more than 65 per cent occupied, but, subject to a solution of the national problem of the balance of payments, he believed there was a gleam of hope in sight for 1948, and the possibility of a better supply of materials.

Marconi's Wireless Telegraph Co., Ltd.—In his speech at the annual meeting held on 18th February, Sir George Nelson (chairman) referred to the fact that 1947 marked the fiftieth anniversary of the formation of the company. During the year they had continued to foster and extend their world-wide sales and manufacturing organization and had received many important inquiries and orders from all parts of the world. The value of orders received during the year constituted a record for the peacetime business of the company.

Their order book covered a wide range of radio equipment, approximately 50 per cent of which was for direct export; the other fifty per cent contained a large proportion of indirect exports. The B.B.C. had entrusted them with the development and manufacture of complete vision and sound transmitters for their latest television station, and during the year their engineers had demonstrated the transmission of a television picture over a radio link. They continued to play a leading part in airborne communication, marine equipment and in the field of navigational aids. The activity of their subsidiary, Marconi Instruments, Ltd., was steadily expanding.

The Westinghouse Brake & Signal Co., Ltd., reports a trading profit to 27th September last of £302,774, compared with £250,413 for 1945-46. With E.P.T. over-provision of £36,500 (£166,000) there is £339,274 (£416,413) available. Depreciation absorbs £65,153 (£59,989) and taxation £118,211 (£147,000), leaving a net profit of £155,910 (£209,424). A sum of £20,000 (nil) has been appropriated for increase in cost of completing a contract begun in 1937, general reserve receives £50,000 (£100,000) and pensions £5,000 (£20,000). The dividend for the year is 14 per cent (against 10 per cent and a bonus of 4 per cent), leaving £93,680 (£99,193) to be carried forward.

Automatic Telephone & Electric Co., Ltd.—Consent of the Capital Issues Committee has been given to a public issue of 1,000,000 4 per cent redeemable cumulative preference £1 shares. Of the new shares 800,000 are to be provided by direct creation and the remainder by conversion of the unissued 7 per cent preference shares. The new money is required to reduce the bank overdraft, finance new plant and equipment and overseas factory development, and to provide additional working capital to meet the expanded output programme. The necessary resolutions are to be proposed at an extraordinary general meeting and separate class meetings on 16th March and the issue will be made as soon as convenient thereafter.

Sterling Electric Holdings, Ltd., shows a net profit for the year ended 31st March last of £4,569 (£6,703). A sum of £2,100 (£3,000) is provided for taxation and £1,151 for writing off debit balance brought in, leaving a credit balance to be carried forward of £1,318. As already reported, proposals for funding preference dividend arrears have been placed before shareholders.

Dewhurst & Partner, Ltd.—Application is to be made for quotation for the ordinary shares of the company, which manufactures electrical control equipment. The issued capital is 600,000 ordinary 2s. shares. The directors anticipate

that the profit for the year ending 30th September next will be not less than £40,000, in which event they will feel justified in declaring a dividend of 30 per cent.

Boulton & Paul, Ltd.—Mr. J. H. Tresfon, the chairman, stated at the annual general meeting that all the necessary preparations had been made for the manufacture of household refrigerators.

The British Power & Light Corporation, Ltd., reports a net profit for 1947 of £338,276, as compared with £349,611 for the preceding year, and after deducting taxation, preference dividends and interim ordinary dividend, there is a balance of £104,931 (against £73,516). The final ordinary dividend is 5 per cent, maintaining the distribution for the year at 8 per cent, less tax, and £268,778 is carried forward (against £219,672 brought in).

The North-Eastern Electric Supply Co., Ltd., records a trading profit for 1947, with interest and dividends, of £1,981,958, subject to audit; this compares with £2,013,543 last year. The net profit, after deducting taxation, depreciation, redemption of debenture stocks, plant renewals, deferred repairs, etc., amounts to £391,127 (£376,742). The final ordinary dividend is unchanged at 4½ per cent, making 7 per cent (same) for the year, and £218,667 (£112,812) is carried forward.

The Clyde Valley Electrical Power Co. recommends a final ordinary dividend of 5 per cent, making 8 per cent for the year (unchanged). The profit for 1947 was £787,902 and there was additional recovery of E.P.T. for 1946 amounting to £97,613. In the previous year the profit, after crediting an estimated £150,000 E.P.T. recoverable, was £680,189, with £27,772 additional E.P.T. recovered for 1945.

The County of London Electric Supply Co., Ltd., proposes to pay a final ordinary dividend of 7 per cent, making 10 per cent for the year (same). Having transferred £5,115 profit on sale of British Government securities to net revenue account and provided for debenture and other interest, depreciation and taxation, and payment of preference and ordinary dividends, the amount carried forward to 1948, subject to audit, is £1,007,620 (£993,397).

The South London Electric Supply Corporation, Ltd., is maintaining its dividend for the year at 7 per cent with a final payment of 4 per cent. The net profit, subject to audit, is £39,238 (against £52,463).

The Richmond (Surrey) Electric Light & Power Co., Ltd., is paying a first and final dividend of 6 per cent, the same as last year.

The Uxbridge & District Electric Supply Co., Ltd., reports a profit for 1947 of £116,421, against £225,337 for 1946. The ordinary dividend is 2 per cent tax free (against 4 per cent).

The Windsor Electrical Installation Co., Ltd., from a profit for 1947 of £19,303 (against £21,918) is maintaining the ordinary dividend for the year unchanged at 4 per cent, tax free.

The Notting Hill Electric Lighting Co., Ltd., reports a net revenue for 1947 of £88,829 (against £127,570 for the previous year). The ordinary dividend for the year is maintained at 5 per cent. tax free.

The Slough & Datchet Electric Supply Co., Ltd., records a profit of £72,012 for 1947 (against £76,906 for 1946). The ordinary dividend for the year is again 4½ per cent, tax free.

The Chesham Electric Light & Power Co., Ltd., reports a profit for 1947 of £34,143 (against £42,311). The ordinary dividend is 2 per cent. tax free (against 3 per cent).

The Egham & Staines Electricity Co., Ltd., shows a profit of £130,482 for 1947 (against £161,574). The ordinary dividend for the year is 3 per cent, tax free (against 4 per cent).

The Brentford Electric Supply Co., Ltd., reports a profit for 1947 of £22,828, as compared with £30,734 for the previous year. The ordinary dividend for the year is maintained at 5 per cent, tax free.

The Electrical Distribution of Yorkshire, Ltd., has declared a final dividend of 4½ per cent. again making 9 per cent for the year.

The North Wales Power Co. reports a net profit for 1947 of £160,542, as compared with £208,188 for 1946. The dividend for the year is unchanged at 5½ per cent.

Bankruptcies

J. Eisner, J. Sunshine, B. Rome and **T. Otaki,** trading as the Lloyd Electric Lamp Co., 8, Rangoon Street, London, E.C.3, wholesale electrical accessories dealers (joint estate).—Last day for receiving proofs for dividend 3rd March. Trustee, Mr. F. H. Langmaid, Bankruptcy Buildings, Carey Street, London, W.C.2, Official Receiver.

S. J. Miles, radio and electrical engineer, carrying on business at 134, Queen Victoria Road, Coventry.—Receiving order dated 15th July, 1936, rescinded and adjudication order dated 15th July, 1936, annulled on 9th February, 1948, on the grounds that all creditors have been or will be paid in full.

F. H. Thomas and **W. E. Evans,** carrying on business in co-partnership at Salubrious Chambers, Salubrious Passage, Swansea, under the style of Thomas & Evans, electrical engineers (joint estate).—Supplemental dividend of 6¾d. in the £, payable 27th February at the Official Receiver's Office, Government Buildings, 10, St. Mary's Square, Swansea.

E. G. Kershaw, carrying on business at Dale View, Luddendenfoot, Yorks, radio and electrical engineer.—First and final dividend of 1s. 8d. in the £, payable 4th March at the Official Receiver's office, Hallfield Chambers, 71, Manningham Lane, Bradford.

STOCKS AND SHARES

THE fixing of the vesting date, 1st April, for the transfer to public ownership of the electricity industry, has not prevented dealings in the stocks and shares of the companies concerned and transactions are marked every day in most of the popular shares connected with the supply industry. Dividends are being announced for the second half of 1947 at the same rates, so far, as those of the previous corresponding half year; to these dividends there will be added a similar percentage from 1st January to 31st March. It is assumed, though not taken for granted, that the price to be paid by the Government will be 100; the same, that is to say, as that given to holders of Home Railway stocks. The Transport 3 per cent stock issued in payment for the Home Railways, stands at about 98¼, a discount of 1¼ upon the payment accorded to proprietors of Home Railway securities. To-day's buying of electricity supply shares is based on the assumption that a 3 per cent British Government stock should be worth roughly 98½ or 99.

Small Advances

In marked contrast to the long lists of falls which prevail in other markets, the electricity supply list shows a number of small advances. It is true that in most cases these rises are of 6d. or 1s., but the fact that the market displays such resilience at a time when most other departments are flat, makes a significant comment upon the expectation of what will happen when the shares become National Electricity Stock. From the point of view of the present holder, nothing is to be gained by selling now, there still being a fair margin between current quotations and the probable equivalent of the new stock. For institutional and other bodies that can claim tax relief, attraction has not yet disappeared for employment of money in the ordinary and preference shares of the supply companies.

Spectacular Rise

A spectacular rise in British Electric Traction deferred stock has lifted the price 160 points to 1,900, owing to optimistic estimates as to what may be considered the break-up value of the security. Notwithstanding the high price at which the stock stands, business has been, and continues to be, surprisingly active, and the buyers are confident that the price is due for a yet higher figure. Another stock to show noticeable improvement is Cable & Wireless ordinary, which has risen 10 points to 187½. The preference stock is 2 points lower at 122½.

Course of Prices

The accompanying price-lists show the extent of the damage suffered by electrical equipment descriptions, in common with other industrial shares, since the first week of February. Weakness set in with the publication of the White Paper on personal incomes, profits and dividends. It has been aggravated by subsequent Government warnings about the critical state of the country's economy. The result is the sharpest set-back in industrial markets since the fuel crisis of a year ago. According to published indices, average prices of industrial ordinary shares are now well below the lowest points touched at that time; but they are still notably above the levels reached after the long slide which occurred last autumn. Thanks for this is due to the strength with which markets finished 1947.

Improvement in Yields

On top of the many falls that occurred during January, the continuation of the former depression has left prices at levels that on the dividends now being paid provide what may be called a "living rate" of yield. For example. Murex, down 10s. on the month, give a return of 4¼ per cent, against 4½ per cent a month ago. Lancashire Dynamo, which have fallen 17s. 6d., pay £4 8s. 0d. after the drop, against 3¾ per cent previously. General Electric ordinary, down 8s. 9d. on the month, return £4 3s. 4d. instead of the 3¾ per cent shown by the previous price of 92s. 6d. Indeed, yields of 4 to 4½ per cent are shown by many of the shares in the accompanying lists, the increases in yield being due to the heaviness of the fall in prices.

Northmet Power

Agreement has been announced between Northmet Power and the Government about the valuation of the company's securities for compensation purposes. Comparison between these prices and current middle quotations for the three principal issues shows 48s. 2d. against 46s. for the ordinary; 31s. 7d. against 30s. 6d. for the 6 per cent preference; and 102½ against 98 for the 4 per cent debenture. Final distributions for 1947 on ordinary and preference have yet to come. Both were paid last year in April. Repetition of last year's 6 per cent on the ordinary would give holders a further 8d. per share, after tax, apart from the compensation. scrip. On the preference shares a full half-year's dividend would amount to practically 4d. net. The debentures are ex the two 1947 payments, and will presumably receive a further three months' interest at the take-over.

A Newcomer

Subject to permission to deal in the shares having been given by the Stock Exchange Council, the market is expected to open on 1st March, in Dewhurst & Partner, Ltd., 2s. ordinary shares. The company manufactures all types of electric control gear. Established in 1919, the business has expanded year by year, and the estimated earnings in respect of the current year are expected to provide for a

(*Continued on page* 335)

ELECTRICAL INVESTMENTS

Past Month's Price Changes

Company	Est. Comp.*	Last Div.	Middle Price 20 Feb. 1918	Month's Rise or Fall	Yield p.c.
Home Electricity Ordinary					
Bournemouth and Poole	66/8	12½	64/6	+1/6	£ s. d. 3 17 8
British Power and Light	37/10	8	36/6	+6d.	4 7 8
City of London ..	34/4	7	33/-	..	4 4 10
Clyde Valley ..	46/5	8	45/-	+1/-	3 11 1
County of London	49/5	10	48/-	+6d.	4 3 4
Edmundsons ..	31/6	6	30/6	..	3 18 8
Elec. Dis. Yorkshire	51/-	9	49/6	+1/-	3 13 6
Elec. Fin. and Securities ..	67/-	15	64/6	+½	4 13 2
Elec. Supply Corporation ..	50/8	10	49/-	+1/-	4 1 8
Lancs. Light and Power ..	37/7	7½	36/6	+6d.	4 2 2
Llanelly Elec. ..	29/1	6	28/-	+6d.	4 5 9
Lond. Assoc. Electric	29/6	6	28/6	+6d.	4 4 3
London Electric	31/4	6	30/-	+6d.	4 0 0
Metropolitan E.S.	48/-	9	46/6	+6d.	3 17 3
Midland Counties	51/5	8	50/-	+6d.	3 4 0
Mid. Elec. Power	47/-	9	45/-	+6d.	4 0 0
Newcastle Elec...	32/7	7	31/-	+1/-	4 10 4
North Eastern Elec.	36/6	7	35/6	+6d.	3 19 0
Northampton ..	50/11	10	49/-	+6d.	4 1 8
Northmet Power.	48/2	9	47/-	+1/-	3 16 7
Scottish Power ..	46/1	9	44/6	+6d.	4 1 1
Southern Areas..	24/-	5½	23/	..	4 15 8
South London ..	33/-	7	30/6	..	4 11 10
Yorkshire Elec...	50/10	9	49/-	+6d.	3 13 6

Company	Dividend Previous	Dividend Last	Middle Price 20 Feb. 1918	Month's Rise or Fall	Yield p.c.
Public Boards					
Central Electricity:					
1963–93 ..	3½	3½	105½	..	3 6 4
1974–94 ..	3½	3½	104½	..	3 2 2
Overseas Electricity Companies					
Atlas Elec. ..	Nil	Nil	14/6	−1/3	—
Calcutta Elec. ..	6†	6†	41/-	−4/-	2 18 7
Cawnpore Elec...	13	13	55/-	−2/6	4 14 6
East African Power	7	7	41/6	−1/6	3 7 8
Jerusalem Elec...	5	6	20/9	−3d.	5 15 8
Madras Elec. ..	8	5	39/6	−1/-	2 10 5
Nigerian Elec. ..	12½	10	38/9	..	5 3 1
Palestine Elec. "A"	6†	7†	32/6	+9d.	4 6 2
Perak Hydro-elec.	6	7	15/6	..	—
Tokyo Elec. 6% .	—	—	54½	−3	—
Victoria Falls Power	19	19½	6⅞	+⅛	2 16 9
Whitehall Inv. Pref.	—	6	25/6	..	4 14 1
Equipment and Manufacturing					
Aron Elec. Ord...	10	15	50/-	−½	6 0 0
Assoc. Brit. Eng.	12	12	40/-	..	6 0 0
Assoc. Elec. :					
Ord.	10	15	75/-	−8/9	4 0 0
Pref.	8	8	42/6	..	3 15 4
Automatic Tel. & El.	12½	12½	62/-	−3/-	4 0 8
Babcock & Wilcox	12½	15	65/-	−6/6	4 12 4

Company	Dividend Previous	Dividend Last	Middle Price 20 Feb. 1918	Month's Rise or Fall	Yield p.c.
Equipment and Manufacturing (*Continued*)					
Baldwin, H.J. (2/-)	10	20	10/-	−6d.	£ s. d. 4 0 0
British Aluminium	8	10	47/6	−6/-	4 4 2
B.I. Callender's..	—	6⅝	32/6	−5/6	4 2 3
British Rola (2/-)	15	10	3/6	−6d.	5 14 0
British Thermostat (5/-)	18½	23½	25/-	−1/3	4 14 0
British Vac. Cleaner (5/-)	30	20	13/9	−1/16	6 18 0
Brush Ord. (5/-)..	4	—	7/-	..	—
Buren (5/-) ..	20	35	26/3	−2/-	6 13 4
Chloride El. Storage	20	20	95/-	−7/6	4 4 2
Christy Bros. ..	17½	17½	80/-	..	4 7 6
Cole, E. K. (5/-)..	20	22½	17/9	−3/3	6 6 10
Cossor, A. C. (5/-)	12½†	25	16/-	−2/-	7 16 4
Crabtree (10/-) ..	17½	17½	39/6	−5/-	4 8 7
Crompton Parkinson Ord. (5/-) ..	22½	22½	25/6	−3/-	4 8 2
De La Rue (5/-)	45	50	41/3	−7/-	6 1 4
Decca (1/-) ..	112½	112½	32/6	−5/-	3 12 0
E.M.I. (10/-) ..	8	6	17/6	−1/6	3 8 8
Elec. Construction	12½	12½	48/9	−3/9	5 2 6
Enfield Cable Ord.	12½	7½	34/6	−3/9	4 7 0
English Electric .	10	10	49/3	−5/9	4 1 4
Ericsson Tel. (5/-)	20†	20†	42/6	−3/9	2 7 0
Ever Ready (5/-)	40	40	36/6	−3/6	5 8 1
Falk Stadelmann	10	15	48/9	−1/8	6 3 0
Ferranti Pref. ..	7	7	37/-	+6d.	3 15 8
G.E.C. : Pref.	6½	6½	35/-	−1/-	3 14 4
Ord.	17½	17½	83/9	−8/9	4 3 4
General Cables (5/-)	25	50	47/6	..	5 5 4
Greenwood & Batley	15	15	50/-	+1/3	6 0 0
H.T.A. (10/-) ..	10	10	17/6	+9d.	5 14 3
Heatrae (2/-) ..	12½	12½	5/-	..	5 0 0
Henley's (5/-) ..	20	20	24/-	−1/-	4 3 4
4½% Pref. ..	4½	4½	25/-	..	3 12 0
Hopkinsons ..	20	22½	95/-	−2/6	4 14 9
Intl. Combustion (5/-)	32½	37½	47/6	−½	3 19 2
Johnson & Phillips	15	15	69/6	−5/6	4 6 3
Lancashire Dynamo	22½	22½	5½	−⅞	4 8 0
Laurence, Scott (5/-)	12½	12½	11/-	−2/-	5 13 8
London Elec. Wire	7½	10	46/3	..	4 6 6
Mather & Platt ..	10	11	48/9	−5/9	4 10 1
Metal Industries (B)	9	10	44/6	−3/-	4 10 0
Mid. Elec. Mfg. ..	30	35	8¼	−5/-	4 5 0
Murex	20	20	83/9	−10/-	4 15 0
Newman Ind. (2/-)	22½	22½	7/3	..	6 4 5
Plessey (5/-) ..	30	20	18/9	−1/3	5 6 8
Parsons C. A. ..	—	12½	67/6	..	3 14 0
Pye Deferred (5/-)	25	25	21/3	−5/-	3 18 7
Radio & Tel. (2/-)	40	—	7/-	..	—
Revo (10/-) ..	20	27½	53/9	−2/9	5 2 6
Reyrolle	12½	12½	63/9	−5/-	3 18 7
Scophony (5/-) ..	—	—	3/6	−6d.	—
Siemens Ord. ..	7½	7½	32/9	−2/9	4 11 9
Strand Elec. (5/-)	12½	17½	11/6	+1/16	7 12 2
Switchgear & Cowans (5/-) ..	25	10	19/-	−2/-	2 12 8
T.C.C. (10/-) ..	12½	15	35/-	..	4 5 9
T.C. & M. ..	10	10	47/-	−4/9	4 5 0

* Proposed amount of British Electricity Stock to be allotted.
† Dividends are paid free of Income Tax.

Company	Dividend Previous	Dividend Last	Middle Price 20 Feb. 1948	Month's Rise or Fall	Yield p.c.
Equipment and Manufacturing (*Continued*)					£ s. d.
Telephone Mfg.(5/-)	9	9	9/3	−6d.	4 17 3
Thorn Elec. (5/-)	20	25	22/6	−½	5 11 1
Tube Investments	22½	25	6⅛	−20/-	4 2 3
Vactric (5/-) ..	Nil	Nil	12/-	−1/9	—
Veritys (5/-) ..	7½	2½	5/-	−6d.	2 10 0
WalsallConduits(4/-)	55	70	53/9	+⅛	5 3 6
Ward & Goldstone (5/-)	35	50	61/3	..	4 1 8
Watford (2/-) ..	15	15	6/-	−3d.	5 0 0
WestinghouseBrake	14	14	62/6	−9/-	4 9 7
West. Allen (5/-)	7½	10	10/6	−9d.	4 15 3
Traction and Transport					
Brit.Elec.Traction:					
Def. Ord. ..	45	50	1900	+160	2 12 8
Pref. Ord. ..	8	8	195	−3	4 2 0
Calcutta Trams..	7½	Nil	32/6	−5/-	—
Cape Elec. Trams	5	6	32/9	+1/9	3 13 2
T. Tilling ..	10	10	96/6	+2/9	2 1 6
West Riding ..	10	12	64/6	−6d.	3 14 6

Company	Dividend Previous	Dividend Last	Middle Price 20 Feb. 1948	Month's Rise or Fall	Yield p.c.
Telegraph and Telephone					£ s. d.
Anglo-Am. Tel. :					
Pref.	6	6	115½	−4½	5 4 0
Def.	1½	1½	18½	−1½	8 3 4
Anglo-Portuguese	8	8	30/-	..	5 6 8
Cable & Wireless :					
5½ Pref. ..	5½	5½	122½	−2	4 9 9
Ord.	4	4	187½	+10	2 2 8
CanadianMarconi$1	Nil	4 cts.	10/-	..	—
Globe Tel. & Tel. :					
Ord.	8½†	5†	43/6	−3/3	2 6 0
Pref.	6	6	30/9	−⅛	3 18 1
GreatNorthernTel. (£10)	18	15	28½	..	5 5 3
Inter. Tel. & Tel.	Nil	Nil	18½	−2	—
Marconi-Marine..	7½	7½	30/-	−2/-	5 0 0
Oriental Tel. Ord.	4	10	52/6	−⅛	3 16 2
Telephone Props.	6	6	18/6	..	6 9 9
Tele. Rentals (5/-)	10	10	10/3	−1/6	4 17 7

† Dividends are paid free of Income Tax.

Stocks and Shares (*Continued from page* 333)

dividend of 30 per cent out of earnings of 50 per cent. The 2s. shares have been placed at 7s. 7½d., subject to the permission already mentioned. At this price, the yield would be £7 17s. 6d. per cent on the proposed dividend of 30 per cent.

Christy Bros.' Future

Few bargains have been recorded in Christy Bros. £1 ordinary since confirmation of the arrangement by which the concern will be treated as an electricity holding company for the purposes of the Electricity Act. The official quotation remains at 80s., which compares with the figure of 84s. 7d. estimated by the board last October as the compensation basis. Since the financial year ends on 31st March, the market assumes that shareholders will also receive in due course a full year's dividend: it is the company's practice to make a single annual payment. Distributions of 17½ per cent for the past few years are equal to 1s. 11d. net per share. Authority has been obtained by the company to sell, before the vesting date, the Chelmsford and Bristol works and certain other assets for a sum of about £40,000. A new company is being formed, to take these over, under the title of Christy Bros. (Chelmsford), Ltd.

Dividend Prospects

As noted here last week, most of the leaders in the market for electrical equipment shares have come down to prices at which the buyer can now see a 4 per cent return on his money—assuming maintenance of the last paid dividends. Confidence in that assumption varies a good deal between one case and another, depending, as it may well do, on whatever the Budget produces in the way of further taxes on company profits or dividends. Eyes were opened rather wide at the disclosure, within the last week or two, of how the present profits taxes can diminish the margin between the earnings and dividends of such companies as Imperial Tobacco and Woolworths. Dividends on the most popular electrical shares are conservative enough to cause shareholders no serious qualms on that score. But there is, naturally enough, a noticeable disinclination to discount increases at this stage of events.

Limitation of Advertising

AS an alternative to the Chancellor of the Exchequer's abandoned proposal to exclude part of expenditure on advertising from the expenses of trading concerns, the Federation of British Industries has produced a scheme of voluntary limitation of advertising.

The scheme put forward by the F.B.I. applies only to certain commodities including goods subject to purchase tax at 66⅔ per cent or more, and trade associations and firms are asked to sign a form endorsing the plan and undertaking to give it effect. It is suggested that there shall be a cut of 15 per cent in the amount spent on advertising in excess of £2,500 in the last completed financial year up to and including 29th February next.

It is recognized that advertisements in papers with overseas circulation have an export value but this is not measurable, nor is it possible to exclude the trade and technical press, but the whole plan is based upon the principle of leaving the advertiser free to choose his own advertising media.

Next Week's Events

Monday, 1st March

BIRMINGHAM.—Imperial Hotel, 6 p.m. Joint meeting of the I.E.E. South Midland Centre and the Institution of Post Office Electrical Engineers. "Speech Communication under Conditions of Deafness or Loud Noise," by Dr. W. G. Radley.

CAMBRIDGE.—Cavendish Laboratory, 8.15 p.m. Joint meeting of the I.E.E. Cambridge Radio Group and the Cambridge University Wireless Society. Discussion on "Sound-Recording Methods."

LEEDS.—Great Northern Hotel, 7.30 p.m. Association of Supervising Electrical Engineers (Leeds Branch). "Simple Vector Diagrams as applied to Electrical Calculations," by J. W. Fall.

LIVERPOOL.—Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. "Centralized Ripple Control on High-Voltage Networks," by T. W. Ross and R. M. A. Smith.

NEWCASTLE-ON-TYNE.—King's College, 6.15 p.m. I.E.E. North-Eastern Radio and Measurements Group. "Activities and Equipment of an Industrial Electronics Laboratory," by G. A. Hickling.

RUGBY.—Corporation Electricity Showrooms, 6.30 p.m. I.E.E. Rugby Sub-Centre. "The Lightning Strength of Power Transformers," by E. T. Norris.

SHEFFIELD.—Royal Victoria Station Hotel, 7.30 p.m. A.S.E.E. Sheffield Branch. "Progress of the Electrical Engineer," by J. C. Burkhard.

Tuesday, 2nd March

ELTHAM.—Castle Hotel, High Street, 8 p.m. A.S.E.E. South East London Branch. "The Maintenance of Continuous Process Plant," by N. Cogger.

LONDON.—Café Royal, W.1, 7.30 p.m. I.E.E. Transmission Section. Buffet dance.

At the Institution of Electrical Engineers, Savoy Place, W.C.2, 5 p.m. Institution of Post Office Electrical Engineers. "Methods of Telephone Apparatus Maintenance," by W. H. Maddison.

The Oddfellows' Hall, 186, Hammersmith Road, S.W., 7.30 p.m. A.S.E.E. West London Branch. "A.C. and D.C. Automatic Contactor Gear for Industrial Purposes," by S. H. Harding.

MANCHESTER.—Joint meeting of the I.E.E. North-Western Centre and the Institution of Post Office Electrical Engineers. "A Survey of the Telephone Rating Problem," by L. C. Pocock.

Wednesday, 3rd March

BRISTOL.—Merchant Venturers' Technical College, 7 p.m. I.E.E. Bristol Students' Section. "Electricity in Large Aircraft," by M. J. J. Cronin.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Radio Section. "The Testing of Communication-type Radio Receivers," by W. J. Bray and W. R. H. Lowry.

MIDDLESBROUGH.—Cleveland Technical Institute, 6.30 p.m. I.E.E. Tees-Side Sub-Centre. "Standardization of Switchgear," by D. E. Lambert and J. Christie.

ROMFORD.—Mawneys Arms, Mawneys Road, 8 p.m. A.S.E.E. North East London Branch. "Light, Vision and Lighting," by B. H. Gurr.

WOOD GREEN.—Three Jolly Butchers Hotel, 8.15 p.m. A.S.E.E. North London Branch. "Automatic Telephony with Special reference to the London System," by H. E. Haines.

Thursday, 4th March

LONDON.—Savoy Place, W.C.2, 5.30 p.m. Institution of Electrical Engineers. "The Electrification of the Warsaw Railway Junction," by J. Podoski.

Friday, 5th March

BIRMINGHAM.—Grand Hotel, 6.30 for 7 p.m. Birmingham Electric Club. Annual dinner.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Measurements Section. "Development and Use of Magnetic Apparatus for Bomb and Mine Location," by A. Butterworth, and "Development of Locators of Small Metallic Bodies Buried in the Ground," by B. Roston.

At the E.L.M.A. Lighting Service Bureau, 2, Savoy Hill, W.C.2, 6 p.m. Royal Statistical Society (Industrial Applications Section). "Statistical Surveys in the Electricity Supply Industry," by W. Pridmore.

39, Victoria Street, S.W.1, 6.30 p.m. Junior Institution of Engineers. Informal meeting. "Some Notes on Flameproof Lighting and Power Installations," by S. L. Lyons.

MANCHESTER.—I.E.E. North - Western Students' Section, 6.30 p.m. Visit to Trafford Park power station.

NEWCASTLE-ON-TYNE.—King's College, 7 p.m. I.E.E. North - Eastern Students' Section. Students' lecture. "Trends in Telecommunication," by A. H. Mumford.

Saturday, 6th March

LEEDS.—City Electricity Offices, Whitehall Road, 2.30 p.m. I.E.E. North Midland Students' Section. "Electrical Annealing Furnaces," by P. H. Schick.

Illumination Design Courses

AN illumination design course, arranged by the Lighting Service Bureau of Scotland, which opened in Falkirk this week, is the first of several courses in Scotland this year which are to be organized by Mr. C. J. King, B.Sc. (Eng.), A.M.I.E.E.

The next London evening design course begins on 5th April.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (1s. each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1942

LAPCO Soc. Anon.—" Installation of electrical instruments on aircraft." 17391. 5th December, 1941. (Cognate application 17392/42.) (597869.)

1943

British Thomson-Houston Co., Ltd.—" Electric indicating systems." 16303. 5th October, 1942. (597873.)

1944

A. W. M. Hartley.—" Electric wiring of buildings, and other structures." 8092. 29th April, 1944. (Cognate application 24669/44.) (597877.)

A. R. E. Arnot.—" Rotating electrical machinery." 20438. 21st October, 1944. (Cognate application 11547/45.) (597882.)

G. R. Fountain, Ltd., H. J. Houlgate and G. C. Wheeler.—" Moving-coil loudspeakers and other electrical devices having a member movable in a magnetic gap." 22654. 16th November, 1944. (597935.)

Photoswitch, Inc.—" Electronic control apparatus." 23130. 20th August, 1943. (597885.)

1945

Standard Telephones & Cables, Ltd.—" Apparatus for testing electrical, and magnetic properties of materials." 3288. 26th February, 1944. (597940.) " Arrangements for tracing electric pulses on cathode-ray oscillographs." 21830. 18th March, 1944. (597986.) " Electric pulse generators employing thermionic vacuum tubes." 21831. 1st May, 1944. (597755.) " Method of producing a selenium coating." 24508. 20th October, 1944. (597847.)

Autophon Akt.-Ges.—" Loudspeaking telephone systems." 5809. 21st December, 1942. (597893.)

British Thomson-Houston Co., Ltd., W. J. Sims and B. P. Brunt.—" Automatic control of electric heating elements." 7139. 21st March, 1945. (597946.)

F. Postlethwaite.—" Multiple beam cathode-ray oscillographs." 8398. 5th April, 1945. (597947.)

Philco Corporation.—" Testing and adjustment of radio systems." 8722. 31st October, 1944. (597948.)

General Electric Co., Ltd., F. H. Brittain, C. E. Ransley and J. W. Ryde.—" Crystal contacts of which one element is silicon." 10045. 20th April, 1945. (597897.)

Marconi's Wireless Telegraph Co., Ltd.—" Frequency modulation of radio-frequency oscillations." 10448. 25th April, 1944. (597950.)

Standard Telephones & Cables, Ltd., and D. L. A. Driver.—" Manufacture of selenium elements such as rectifiers." 10700. 27th April, 1945. (597899.)

Engineering & Lighting Equipment Co., Ltd., W. Bird and A. T. Dowdell.—" Electrical contact suspension devices for lamps or the like." 11209. 3rd May, 1945. (597900.)

Soc. Rateau and R. Anxionnaz.—" Gas turbines." 13616. 21st May, 1943. (597953.)

W. C. Bexon.—" Super-tension cables." 17388. 7th July, 1945. (597957.)

W. W. Triggs (Farnworth Television & Radio Corporation).—" Photo-electric cell using electron multiplication." 17515. 9th July, 1945. (597958.)

Westinghouse Electric International Co.—" Current-collecting devices." 18115. 28th January, 1943. (597961.)

J. H. Cotton.—" Micro-wave control apparatus." 18853. 23rd July, 1945. (597832.)

Stern & Michaels, Ltd., and C. Peritz.—" Electric plug and socket connectors." 19511. 30th July, 1945. (597963.)

Standard Telephones & Cables, Ltd., and G. Gilliver.—" Welding equipment." 19918. 2nd August, 1945. (597910.)

R. H. A. Carter and G. Bradfield.—" Radio-location equipment." 20651. 10th August, 1945. (597912.)

D. H. Peirson.—" Oscillograph display systems." 21203. 20th August, 1945. (597836.)

British Insulated Callender's Cables, Ltd., London Passenger Transport Board, T. C. Broom and T. Wilkinson.—" Switch frogs for the overhead conductors of electric traction systems." 21859. 25th August, 1945. (597761.)

C. Morris.—" Dish-washing machines." 21878. 25th August, 1945. (597765.)

Hazeltine Corporation.—" Radio direction-indicating device and system." 21885. 15th September, 1944. (597769.) " High-frequency impedance-matching device." 24738. 16th November, 1944. (597922.) " Wave-signal transmission line having an adjustable terminal impedance." 28813. 16th November, 1944. (597923.)

Hopkinsons, Ltd., W. B. Dale and R. L. Brown.—" Electrical control gear of soot blowers." 21921. 27th August, 1945. (597778.) " Electrically operated soot blowers for steam boilers." 21922. 27th August, 1945. (597779.) " Illuminated indicators." 21923. 27th August, 1945. (597780.)

Sulzer Frères Soc. Anon.—" Combustion product turbine power plants." 21954. 31st August, 1944. (597916.)

British Thomson-Houston Co., Ltd.—" Electric lamps more particularly for heating purposes." 21974. 31st August, 1944. (597792.)

General Electric Co., Ltd., and E. Friedlander. —" Field excitation arrangements for electric alternators." 21976. 27th August, 1945. (597793.)

Shell Development Co.—" Flaw detector for electrically conducting tubular elements." 22004. 19th September, 1944. (597798.)

R. Frost.—" Fluorescent lighting devices." 22024. 27th August, 1945. (597804.) " Suspension devices for fluorescent lighting devices." 22025. 27th August, 1945. (597805.)

Sperry Gyroscope, Inc.—" Ultra-high-frequency electron-discharge apparatus." 22036. 25th August, 1944. (597998.)

W. W. Triggs (Aktiebolaget Gustavsbergs Fabriker).—" Heating element for electric resistances." 22095. 28th August, 1945. (598007.)

Craven Bros. (Manchester), Ltd., and W. Owen.—" Production of turbine reduction gears." 22140. 28th August, 1946. (598016.)

A. H. Stevens (Breuer Electric Manufacturing Co.).—" Cover or lid for a portable suction cleaning apparatus." 22217. 29th August, 1945. (598028.)

W. H. B. Thornton.—" Electrically heated kettles." 22257. 29th August, 1945. (598032.)

H. W. K. Jennings (Titanium Alloy Manufacturing Co.).—" Dielectric compositions, and methods of producing the same." 22278. 29th August, 1945. (598038.)

Belling & Co., Ltd., and C. R. Belling.—" Electric cookers." 22695. 4th September, 1945. (597967.)

Electrical Components, Ltd., and W. Sommer. —" Electrical fuse distribution board." 22839. 5th September, 1945. (597968.)

E. M. Scott.—" Electric trucks." 23067. 7th September, 1945. (597846.)

F. E. Burger.—" Charging arrangements for electric battery-operated trucks." 24238. 19th September, 1945. (597919.)

British Thomson-Houston Co., Ltd., and B. E. G. Forsling.—" Heat exchangers." 27468. 19th October, 1945. (597852.) " Combustion chambers for internal-combustion gas turbines with heat exchangers." 27469. 19th October, 1945. (597853.)

F. E. J. Girling.—" Electronic valve circuits." 27971. 23rd October, 1945. (597977.)

Chadburns (Liverpool), Ltd., and A. E. Brewerton.—" Electric remote control of telegraph instruments and systems." 30533. 15th November, 1945. (597857.)

Precious-Metal Rolling

A " BRIGHTSIDE " mill, employed by the Sheffield Smelting Co., Ltd., for rolling gold, silver (fine and alloyed), nickel and copper, has recently been equipped by the General Electric Co., Ltd., with electric drive. The cast bars of material are reduced to sheets of varying thicknesses by cold rolling. Particularly important is the finish of the rolls, which must be capable of producing a flat, uniform sheet that is easily polished and free from surface defects. Cleanliness of the equipment and working area is also essential to ensure that the precious metals handled are of the required purity.

The rolls themselves which are 24 in. (60·1 cm) in diameter and 30 in. (76·2 cm) long, are manufactured from carbon chilled cast iron. The mill is driven by a 200-h.p., 400-V slip-ring motor running at 585 r.p.m., but this speed is reduced by means of double helical gearing to about 10 r.p.m. The motor is mounted on top of the gear housing, which also incorporates the reduction gears and mill pinions. Forced feed lubrication is provided by means of a mechanical lubricator driven by a 1-h.p. protected type G.E.C. motor, which incorporates a safety switch. Thus failure of the oil circulating system automatically stops the mill. The high-speed shaft runs in self-aligning roller bearings, while the mill pinions and slow-speed shaft are fitted with phosphor-bronze sleeve type bearings.

G.E.C. 200-h.p., 400-V slip-ring motor driving a precious-metal rolling mill

Each bar of metal measures 12 by 5 by 1 in. (30·5 by 12·7 by 2·54 cm) and weighs about 20 lb (9·07 kg) the mill handling 50 such bars per hour. Each stage of rolling reduces the thickness of the bar by approximately one-tenth, depending upon the type of metal being rolled, until a 50 per cent reduction has been reached. The metal is then annealed.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Birkenhead. — 3rd March. Electricity Department. 150-MVA switchgear and 500- and 750-kVA transformers. (13th February.)

Blackpool.—8th March. Electricity Department. One 8-panel 6·6-kV metalclad switchboard and one set of control equipment. (20th February.)

Dewsbury.—12th March. Electricity Department. High-pressure mercury-vapour street lighting equipment. (See this issue.)

Dunfermline.—1st March. Fife County Council. Electrical work, etc., for central kitchen and dining room at the High School. Schedules from C. R. Douglas & Co., 15, East Port, Dunfermline.

Egypt.—31st March. Egyptian Government. In connection with the invitation for the supply of mechanical and electrical equipment for the Aswan Dam hydro-electric scheme, the Government announces that offers of second-hand Diesel generating sets of 250 kW each will be considered. (20th February.)

Farnworth.—10th March. Electricity Department. Switchgear, distribution boards, cables, earthenware pipes and cable tiles. (20th February.)

Hale.—March 24th. Urban District Council. Four centrifugal pumps, with motors, switchgear, etc., for the Hale drainage scheme. G. B. Kershaw & Kaufman, 1, Victoria Street, Westminster, S.W.1.

Hull.—10th March. Electricity Department. Diesel-electric shunting locomotive and motor-operated lathe. (See this issue.)

Irlam.—1st March. Urban District Council. Electric lamps for one year to 31st March, 1949. Surveyor, Council Offices.

Plymouth.—10th March. Electricity Department. Ash conveyor belts. (See this issue).

Stoke-on-Trent.—9th March. Town Council. Lighting and power installation in a new building at Etruria Gasworks. J. E. Stanier, chief engineer, Etruria Gasworks.

10th March. Electricity Department. 33-kV and 6·6-kV switchgear. (20th February.)

Wembley.—March 3rd. Town Council. Electric lamps for one year from 1st April. Borough engineer, Wembley Town Hall.

Orders Placed

Acton.—Borough Council. Accepted. Street lighting installation.—Concrete Utilities and Siemens Electric Lamps & Supplies.

Stockton-on-Tees.—Town Council. Accepted. Equipment for extending the Eaglescliffe-Preston substation:—Switchgear (£3,351).—A. Reyrolle & Co. L.v. switchgear (£420).—W. Lucy & Co. Transformers (£589).—C. A. Parsons & Co. Cable (£14,962).—Edison Swan Cables.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Aberbargoed.—Factory premises for Wales & Monmouthshire Estates, Ltd.; Henry Budgen & Son, architects, Westminster Bank Chambers, St. Mary Street, Cardiff.

Alcester.—New wing at Grammar School; C. H. Elkins, Warwickshire county architect, Shire Hall, Warwick.

Alston.—Additions to the Rith Lancaster James Cottage Hospital; Graham & Roy, architects, 6, Paternoster Row, Carlisle.

Amble.—Housing scheme (500 houses); H. S. Robson, U.D.C. surveyor.

Belfast.—New cinema in Castle Street for Odeon Theatres, Ltd.; H. W. Weedon & Partners, architects, 14, Chantry Road, Birmingham.

Beverley.—Fire station, Filey for East Riding C.C.; county architect, L. A. Reynolds, County Hall.

Birkenhead.—Primary school, Bedford Drive; Willink & Dod, architects, Cunard Building, Liverpool, 3.

Rebuilding Ocean Flour Mills of Joseph Rank, Ltd.; L. G. Mouchel & Partners, Ltd., consulting engineers, 38, Victoria Street, S.W.1.

Blackpool.—Houses (27), Lentworth Avenue; R. Fielding & Son, builders, Stanhope Road Works.

Blyth.—Extensions to works for John B. Bilton & Co., Ltd., Quayside.

Bolton.—Completion of Municipal Technical College, Manchester Road; Lanchester & Lodge, architects, 10, Woburn Square, W.C.1.

Cefn Mawr.—Factory premises; Monsanto Chemicals, Ltd., Victoria Station House, London, S.W.1.

Cheadle.—Houses (16), Blythe Bridge for R.D.C. (£23,992); H. T. Goodwin, Ltd., builders, White Lodge, Adamthwaite Drive, Blythe Bridge.

Chelmsford.—Extensions to Chelmsford and Essex Hospital; Adams, Holden & Pearson, architects, University of London, W.C.1.

Coventry.—Primary school, Radford Road; D. E. E. Gibson, borough architect, 1a, Warwick Road.

Cramlington.—Premises at the Lamb Pit for training young miners; National Coal Board, Newcastle-on-Tyne.

Crook and Willington.—Houses (46) at Low Mown Meadows for the U.D.C.; John Twiname, Ltd., builders, Cockermouth.

Cumberland.—Police headquarters near Penrith; county architect, 4, Alfred Street North, Carlisle.

Edmonton.—Rebuilding factory, Shaftesbury Road, of Key & Whiting, Ltd.; J. Barrington Baker, architect, 12a, Spring Street, W.2.

Enfield.—Memorial houses (20) Ridgeway, for Middlesex Regiment; Brian L. Sutcliffe & Partners, architects, 5, Manchester Square, W.1.

Fifeshire.—Miners' houses (300); burgh surveyor, Kirkcaldy.

Gateshead.—New Lobley Hill infants' school, and houses (33), Avon Street; H. J. Cooke, chief architect, Municipal Buildings.

Guisborough.—Extensions to Guisborough Shirt & Underwear Co.'s factory; Kitching & Co., architects, 21, Albert Road, Middlesbrough.

Hull.—Large new refinery at Melton; Synthetic Chemicals, Ltd., Cleckheaton, Yorks.

King's Langley.—Houses (60), Barnes estate; F.R.S. Yorke, architect, 35, Welbeck Street, W.1.

London. — CRICKLEWOOD. — Extensions to works for Non-Ferrous Die Casting Co., Ltd., North Circular Road; G. A. Sexton & Son, architects, 42, Kilburn High Road, N.W.6.

CAMBERWELL.—Dwellings (167), Champion Hill and Sydenham Hill; Respective architects, Howes & Jackman, 1, Verulam Buildings, W.C.1, and A. W. Kenyon, 15, Adeline Place, Bedford Square, W.C.1.

PECKHAM.—Blocks of flats at Peckham Rye for Camberwell Housing Society, Ltd.; Co-operative Planning, Ltd., architects, 73b, South Side, Clapham Common, S.W.4.

STEPNEY.—Second stage, three blocks of flats, Tarling Street; B. W. Stuttle, borough engineer, Municipal Offices, Raine Street.

Manchester.—Extensions to factory of J. H. Dutton & Co., Ltd., Greenheys Lane; A. Hodkinson, Ltd., builders, 62, Greenhill Street.

Houses (27), Baguley Hall estate; A. Locke (1940), Ltd., builders, 166, Lostock Road, Davyhulme.

Newcastle-on-Tyne.—School in Linfield Avenue (£98,000); education architect, Education Offices, Northumberland Road.

Domestic science block at Benton for Northern Counties Training College; Tasker & Child, Trinity Buildings, New Bridge Street.

Northumberland.—Schools at Lynemouth and Morpeth and kitchen and dining rooms at Morpeth, Lynemouth and Newbiggin; county architect, County Hall, Newcastle-on-Tyne.

Oldham.—Day nursery at Tate Street, Glodwick; the Haldean Building Co., Booth Street, Middleton Junction.

Portsmouth.—Dwellings (92) at Walford, Beverston and Derrhurst Roads; city architect, 1, Clarence Parade, Southsea.

Prudhoe-on-Tyne.—Houses (105), Oaklands estate; U.D.C. housing architect.

Reading.—Two blocks of flats, Westcote Road; A. P. Watts, builder, 81, Church Road, Ashford, Middlesex.

Shildon.—Houses (30), Vicarage Field housing site, for the U.D.C.; Kitching & Co., architects, 21, Albert Road, Middlesbrough.

Stockport.—Cast iron foundry at Viaduct Engineering Works, Heaton Lane; J. & J. Greig, Ltd.

Sunderland.—Factory for Fordham, Ltd., on the Pallion estate; R. G. Finlay, Ltd., builders, 28, West Sunniside.

Surbiton.—Temporary church, Church Hill Road; Young & Hall, architects, 9, Southampton Row, W.C.1.

Walsall.—Additional factory buildings, Brockhurst Crescent; Graham Firth Steel Products, Ltd., Brockhurst Works, Bescot.

Wallsend.—Extensions to works of Monitor Safety Devices, Ltd., King's Road; staff architect.

Works additions for Tyne Plywood Works, Ltd., Willington Quay.

Watford.—Houses (34), Garston Park Street; borough engineer, Town Hall.

Electricity in Ulster

Government's Proposals

FURTHER details of the Northern Ireland Electricity (Supply) Bill show that it provides for the establishment of a Joint Electricity Committee whose main function will be the control of generation and primary transmission and the purchase, at cost of production, of all electricity produced in Northern Ireland. It is also proposed that the Committee should have power to re-sell electricity to distributing authorities at a standard tariff including the incidental expenses incurred by the Central body; and to prepare schemes designed to ensure the maximum efficiency and economy in the installation of new plant and the production of energy from all sources. There is provision for the transfer to the present Electricity Board of the generating stations and undertakings constructed and acquired by the Ministry of Commerce under emergency legislation and for expansion in the personnel of the Board appropriate to its increased responsibilities.

The Bill also provides for the institution of a system of loans for the purchase of agricultural electrical equipment and for the setting up of a Rural Electrification Council to encourage the use of electricity in agriculture. The promise to abandon the guarantee system so far as it affects purely rural electrification is implemented.